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# Journal of Educational Research

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VOL. X SEPTEMBER, 1924 No. 2

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# Journal of Educational Research

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JOURNAL *of* EDUCATIONAL RESEARCH

Volume X SEPTEMBER, 1924 Number 2

# A TECHNIQUE FOR TRAIT ANALYSIS[1]

W. W. CHARTERS

*University of Pittsburgh*

Whether one is an educator or a psychologist one is compelled at some time or other to deal with the phenomena of personality. Particularly is this true of the educator, who, in his effort to train his students, finds continuously that he must deal with personal qualities and traits of character and personality. Very frequently this contact is passive, since the educator deplores weaknesses of personality, regrets that nothing can be done about it, and leaves to accident and experience the development of desirable traits.

Yet positive steps can and must be taken by educators appreciably to develop traits of personality within the limits of the native endowment of the student.

With this point of view in mind the writer has been playing with the problem of trait analysis from the educator's point of view for the past two or three years, and the rules of the game have been developed to a point where they are ready for the reactions and criticisms of other players.

Six problems have emerged from the studies that have been made. These studies include an analysis of the traits of dressmakers, milliners, secretaries, life-insurance salesmen, teachers in department stores, and home-makers. The six problems are: collection, definition, translation, condensation, evaluation, and use. They will be taken up briefly in the order named.

[1] Read before the joint session of the National Society of College Teachers of Education and the Educational Research Association, February 27, 1924.

## Collection

In collecting the traits that are present in followers of a vocation we have sought for those conspicuous traits whose presence to a high degree explains the success, and whose absence, or whose presence to a low degree, explains the failure in the performance of the activities involved in the occupation. No attempt is made to include all the traits; only the conspicuous traits are discovered.

Through the concensus method the opinions of qualified judges are sought through interviews. An illustration of the questions whose answers are sought in the interview is found in the following list which was used in collecting the traits of secretaries:

1. When hiring a secretary, what are the qualifications in which you are especially interested?
2. What are your educational requirements?
3. What qualities do you think distinguish the secretary from the stenographer as the term is ordinarily understood? Will you give me an example of these qualities in terms of activities?
4. Who was the best secretary you ever had? Now tell me in what respects she differed from the others you have had. Why did she come to your mind first?
5. What things have secretaries done for you that pleased you very much? (Give me an example of the sort of thing secretaries do for you which pleases you very much.)
6. What are some things which secretaries do which you find very irritating?
7. Have you ever discharged a secretary? Why? (Have you heard of a friend's discharging a secretary? Why was it?) Have you ever wanted to discharge, but just didn't? Why?
8. How has your present secretary grown since you employed her? How do you train her?
9. If you could improve on her by merely wishing, in what way would you have her different? Have you ever wished "I wish I could turn this over to her"—but you couldn't? Why couldn't you?
10. Do you think that ————* secretaries need special personal qualifications? Special educational qualifications? (*Here mentioning the name of the occupation in which the interviewee is engaged.)

These questions were designed to overlap: What we were seeking for was a number of different angles from which the interviewee might explore his ideas.

It has been our experience that in no case have more than twenty-one interviews been necessary to reveal all the traits that are mentioned by a group of interviewees. Specifically, in the case of life-insurance salespeople the first three managers interviewed, out of a total of twenty, mentioned all the traits found on the final trait list. The first eight out of twenty interviewees mentioned all the traits of dressmakers, the first twelve out of twenty mentioned all the traits of milliners, and the first sixteen out of twenty-eight employers of secretaries brought the study to the point of vanishing returns.

## Definition

When the recorded material secured in interviews is studied the problem of definition immediately arises. Different interviewees have different meanings for the traits which they mention. To discover what the abstract traits mean to them we might use synonyms, asking them to define their meaning in terms of synonyms. But synonyms do not give exact definitions. So in consequence we use modes of behavior as the method of defining the traits. That is to say, we ask the interviewee what the person does who exemplifies the trait which he mentions. These active expressions of the trait we call "trait-actions." So in all the studies we have defined the traits in terms of trait-actions. For instance, the trait of accuracy, as exemplified in the vocation of secretary is defined as follows:

She does not make mistakes in typing.
She does not make mistakes in computing.
She gets the spelling and pronunciation of people's names straight.
She pays attention to detail.
She files material under the proper heading.
She does not make mistakes in keeping records and data.
She brings back the exact information asked for.
She does not lose papers.
She does not guess when information is desired.
She does not make mistakes in transcribing dictation.
She sees that every letter is perfect before it is mailed.
She checks all her work.
When she records engagements and makes appointments, the names of the people, the place of meeting, and the dates are always right.

When she looks up references her notes and information are to be relied upon.
She does not take down words or sentences phonetically without looking them up if in doubt of their meaning.
She does not send out a letter unsigned.
She does not make mistakes in proofreading.
She never puts the wrong address on a package.

## Translation

When we examine the material obtained in the interviews, we find that the interviewee has described the traits sometimes in terms of abstract trait names, such as "accuracy" or "dependability" and has sometimes defined them in terms of trait-actions, as "he always adds figures correctly" or "when I tell him to do something I can forget it." It, therefore, becomes necessary to translate the trait-actions and the traits into the standard terms which the translator uses, and which, in the translator's mind are defined by means of an accepted list of trait-actions.

The translating procedure is probably the most highly subjective and the most difficult step in trait analysis and a great deal of technical study still needs to be done in the field of translation before it is sufficiently objective, that is, objective to the point where two translators can obtain the same traits by reading over the same material. Our method at the present time has not yet gone beyond the point where we have two translators work independently upon the collected material and then reconcile their differences in conference. In the secretarial study, for instance, one translator in the preliminary study—which was made without any effort for condensation of the list—discovered 87 traits while the second translator discovered 79. In conference they found that they had 51 traits in common. The technique by which they can more nearly agree in their preliminary study has not yet been perfected.

## Condensation

There is no theoretical limit to the refinement of the analysis of personality but there is a practical limit. If the trait list is to be used as a basis for trait development, it is obvious that it

must not be too long and that the differences between the traits should not be too refined for semi-popular use by teachers and students. On the other hand, the traits must not be made so general that exact work cannot be done upon them. For instance, it is quite futile to say that the salesman must possess personality. At once the teacher will feel the need of breaking this down into more specific traits. Consequently there are rather broad limits to which the analysis must be carried. That is to say, the traits must not be too refined for efficient use and they must be refined enough for the teacher to know exactly what is meant.

In other studies we have found that the tendency is to over-refine the initial analysis and condense the list of traits later. For instance, in the secretarial study the quality which finally appeared on the trait list as "judgment" was found in the original analysis to include: discrimination, discretion, ability to size-up people, artistic judgment, and knowingness. We prefer to have preliminary analysis quite refined and depend upon condensation in the conference for shortening the list. For instance, in the secretarial study the original lists of 87 and 79 were reduced in conference to 47, and the use of this list shows us that it could probably be reduced somewhat further without affecting its efficiency. In the home-makers study we finally arrived at a list of 48 traits, in the dressmakers a list of 33, and in the milliners, of 44.

## Evaluation

It is of considerable interest to know which of the conspicuous traits are considered to be of most importance and it is of further interest to know whether there is a difference of opinion between the traits which are important from the point of view of those within the vocation and those which are important from the point of view of the public who uses the professional services of the followers of the vocation.

In determining the relative importance of the traits mentioned we have used two methods. The first of these is the frequency of mention by interviews. In this we have counted

the number of interviews in which mention of a trait was made, and, conversely, have paid no attention to the number of times that any one interviewee mentioned it. This is quite important because it is much more significant to know that one trait was mentioned by seven interviewees than that it was mentioned seven times by an individual. On this basis we found that out of 28 employers of secretaries the following ten traits were mentioned by the number of employers indicated in the right-hand column.

| *Trait* | *Employers Mentioning* |
|---|---|
| accuracy | 24 |
| responsibleness | 23 |
| dependability | 21 |
| intelligence | 21 |
| courtesy | 20 |
| initiative | 20 |
| judgment | 20 |
| tact | 19 |
| personal pleasantness | 18 |
| personal appearance | 18 |

The second method used is to present the total list obtained through interviews to expert judges and ask them to divide it into three classes by indicating which they think are of most importance, which are of least importance, and considering the remainder as belonging to a group which is secondary in importance. These are then weighted statistically. The result gives a total evaluation. Up to date, however, we have been depending chiefly upon frequency of mention.

# DIAGNOSING INDIVIDUAL CASES[1]

J. FREEMAN GUY
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Instruction, we are told, must be adapted to the mental, social, civic, and physical needs of the child. This is more easily said than done under our present form of school organization, because pupils vary tremendously in native ability. In our city we have found that the mental ages in the VIII-A grade as measured by Otis General Intelligence Scale ranged from 8 years 1 month to 18 years; the intelligence quotients of the same grade ran from 52 to 145. According to Terman's classification this means that the range in the VIII-A grade was from the embecile to the near-genius.

This is not only true of intelligence, but it is true of the achievement subjects. In a recent spelling survey in Pittsburgh, the average scores of the various schools ranged from 31 to 89 percent; 100 percent was the maximum score. Variation among pupil's scores was even greater, ranging from 10 to 100 percent. In the writing survey, pupils varied in rate from 10 to 156 letters per minute, while the quality varied from 10 to 90, within the same eighth grade. In the same writing survey the range of median scores for grade VIII-A was from 16 to 114 letters per minute, the class writing 114 letters per minute having two and one-half times the quality of the class writing 16 letters per minute. This, plus similar evidence which could be piled up indicates that the needs of schools, of classes, and of pupils vary tremendously, and that the treatment must be differentiated to meet the needs.

Typical cases—problems to be solved—are arising almost daily. Ten years ago the solution had to be attempted largely by guess work, but today with the advent of scientifically constructed standardized tests and scales, the administrator or

[1] Paper prepared for the joint session of the National Society of College Teachers of Education and the Educational Research Association, Wednesday, February 27, 1924, at Chicago.

teacher has at his command invaluable instruments for the diagnosis of a given situation. An interesting and yet typical classroom case came to my attention about a year ago. A teacher of algebra reported that he was having difficulty in teaching a certain group, because he had such varied abilities in his class. He asked the Department of Research and Measurement to diagnose his case. Since it was *native ability* or *capacity to learn* that was to be determined, the Otis General Intelligence Scale was administered to the group. Table I shows the scores obtained by these pupils.

TABLE I. SCORES OBTAINED ON OTIS GENERAL INTELLIGENCE SCALE BY THE PUPILS OF AN ALGEBRA CLASS

| | Intelligence Quotient | Frequency | Number in Each Class |
|---|---|---|---|
| Very Dull | 71– 75 | 1 | 1 |
| Dull | 81– 85 | 2 | |
| | 86– 90 | 4 | 6 |
| Average | 91– 95 | 2 | |
| | 96–100 | 2 | |
| | 101–105 | 3 | |
| | 106–110 | 3 | 10 |
| Superior | 111–115 | 3 | |
| | 116–120 | 4 | 7 |
| Very Superior | 121–125 | 3 | |
| | 126–130 | 2 | |
| | 131–135 | 2 | |
| Near-Genius | 136–140 | 2 | 9 |
| | 146–150 | 1 | 1 |

According to Terman's[2] interpretation we note that one pupil is *Near-Genius*, one is *Very Dull;* six are *Dull*, nine are *Very Superior;* seven are *Superior;* and ten are *Average*. Is it any wonder that this instructor in algebra was having difficulty in adapting his instruction to the situation? What was he to do? Should he adapt his instruction to the ten pupils who were in the very superior and near-genius groups? If he did, the very dull and dull ones would no doubt think he was talking "Choctaw." If he adapted his instruction to the seven pupils who composed the dull and very dull groups, the pupils in the very superior

[2] *The Measurement of Intelligence.* New York, Houghton, Mifflin Company, 1916. p. 79.

and near-genius group would go to sleep or, worse still, be guilty of some breach of school etiquette which would earn for themselves the opprobrium of "being bad in school." The common practice has been to adapt the instruction to the average pupil—if there be such—but this does not meet the situation, because neither the pupils of superior ability nor those of inferior ability are considered. The work is somewhat above the capacity of the dull pupils and is quite markedly below the level of the superior group, while the very superior and the near genius are not challenged at all.

The diagnosis revealed these wide discrepancies in ability. What remedy should be applied? For this situation two solutions were possible: (1) arranging or dividing all the pupils in algebra into homogeneous groups as is done in a number of other schools; and (2) attempting to adapt the instruction to the individual needs of the children. Circumstances made it necessary to accept the second alternative so the instructor assumed that he had three classes in one; the seven pupils in the very dull and dull groups were considered one section; the average and superior, seventeen in all, were considered another section; and the ten pupils who were very superior and near-genius were considered a third section. When the assignments were made, they were always made with these three divisions in mind. The simplest fundamentals of algebra were assumed to be all that the slow group could master. The equation, the formula, and the graph were particularly stressed with this group, because these three topics are of greatest social import. The middle group was given the regular course of study in algebra, while the superior group was given everything that the other two groups received plus special assignments of the more difficult examples, original problems, and extra work from textbooks and other sources. In other words, the teacher was constantly endeavoring to keep everybody's mental engine working to full capacity. The lesson was conducted sometimes by recitation and sometimes by a conference plan. Thus the needs of each one of the pupils were provided for as nearly as possible under the prevailing con-

ditions; the class situation was diagnosed and appropriate remedial measures applied.

Every year the grade placement of individual pupils presents many cases typical of all schools. Shall a pupil be promoted on the basis of the teacher's judgment, according to the principal's judgment, on the basis of mental ability, on achievement, on effort plus achievement, or on age plus "bulk," or what not?

Madeline, aged 8 years 7 months, and in II-A, is a case in point. She entered grade I-B at the age of 7. Madeline was bright, but she was so spoiled—impertinent, uppish, and genuinely mischievous—that the teachers failed to behold that she was a star of considerable brilliancy. The parents complained that the course of study for the second year was entirely too easy for her, and, in default of the double promotion requested, removed the girl from school, secured an able tutor for a year, and were about to place her in a private school, when the case was brought to the attention of the Department of Research. To diagnose the case, Madeline was subjected to a battery of tests. On the Otis Self Administering Test she made a score of 21, which for her age gives a mental age of 9 years 9 months and an I.Q. of 113. On the Illinois Intelligence Scale she scored 40, giving her a mental age of 9 years 6 months, an I.Q. of 111, and a B-score (grade placement) of 4.2. This B-score of 4.2 signifies that, as far as intelligence is concerned, she is eligible to enter grade IV-B. Her score for rate on the Monroe Reading Test I was 146 and for comprehension, 9. A rate score of 146 according to Monroe yields an achievement age of almost 11 years, and a B-score of 5.2. A comprehension score of 9 yields an achievement age of 10 years, and a B-score of 4.6. Madeline reads rapidly, but her quality in the Monroe test was erratic. She did better on the reading section of the Stanford Achievement Test, for her reading age was 11 years 2 months. This girl is quite well versed in history, literature, and language, but weak in spelling. Her composite educational age on the Stanford Achievement test was 10 years 7 months; her educational quotient (composite educational age divided by chronological age) was 123. This is normal achievement for the fourth year

of school work. Upon recommendation she was placed in grade IV-B, made excellent records, and spent the happiest school year of her life. An interesting and valuable corollary is that the acrimony of the parents against the public schools has completely vanished.

In September, 1921, a boy whom for convenience we shall call Frank moved into the city of Pittsburgh from the rural districts. Frank had been taught by his father and mother and had never been in school a day in his life, although he was 11 years 8 months old. The boy was brought to the office of the Department of Research for grade placement by the associate superintendent in charge of the district. In what grade should he be placed? His age, 11 years 8 months, chronologically placed him in the fifth year. Several years ago, before the advent of more adequate and accurate methods, almost any progressive superintendent of schools, for lack of better information, would have placed him in the low-fifth grade, because the rank and file of supervisors thriftily avoid demotions, if possible.

Frank was given a battery of tests. The Otis General Intelligence Scale was administered, in which he showed an I.Q. of 130. This intelligence quotient indicated that he was very superior in native ability or capacity to learn. He was also given the Stanford Revision of the Binet-Simon Test, and scored a mental age of 14 years 8 months, yielding an I.Q. of 126. The close correspondence between the two tests would indicate that his intelligence level was adequately measured.

He was then given the Thorndike-McCall Reading Scale, in which his T-score was 61, yielding a corresponding reading age of 181 months. His reading quotient (reading age divided by chronological age) was 129. A reading quotient of 129 is interpreted by McCall as very superior,—only 5.8 percent of the elementary-school pupils reaching this score.[3] Furthermore, a T-score of 61 indicates ability equal to the average of grade VIII-A. When given the Monroe Standardized Silent Reading Test, he made a score of 209 in rate and 15 in comprehension. The

[3] *Direction for Using Thorndike-McCall Reading Scale*, New York, Teachers College, Columbia University, p. 6.

former is equal to a B-score (grade placement) of approximately 9.5, that is, he has ability in rate of reading equal to pupils midway through their ninth-school year. In other words, his rate of reading would justify his entering grade IX-A. His comprehension score of 15 yields a B-score of 9.1; in other words, this score in comprehension would justify his placement in grade IX-B. A sample of his writing was scored on the Ayres scale. He wrote at the rate of 70 words per minute, which is equivalent to the median ability of the sixth-year pupils. His quality was 50, which is equivalent to the norm for the fifth year in quality of writing as measured on the Ayres scale. He was then given the Pittsburgh Spelling Scale, which is composed of words selected horizontally from the Buckingham-Ayres list of words. He spelled 21 words correctly, which on that list of words is equal to the ability of the X-B grade, if judged by the Ayres standards. This score, however, is surpassed by only 5 percent of the children of the city of Pittsburgh, irrespective of grade.[1] When given the Otis Arithmetical Reasoning Test, Frank made a score of 13, which would justify his placement in grade VIII-A in Pittsburgh. In the Pittsburgh Arithmetic Scale in the four fundamentals he tried 32 and had 32 right, which is the VII-B standard.

Another aspect of the question that always needs to be considered in diagnosing a case is the physical or health side. It goes without saying that a pupil's progress through school should not jeopardize his health. Frank was 55.5 inches tall, and weighed 74 pounds. His height was three-tenths of an inch above the average height (55.2) for boys of his age; his weight was three points below the average (77.3) for boys of his age. His parents reported that his health had always been good save for the diseases common to children.

The boy's intelligence quotient threw him into the very-superior group for native ability. Analyzing his achievements we found that he had an average B-score of 8.2. This indicates that he had quality of scholarship that passed him 0.2 of the way through the eighth-school year. Stated otherwise, his average

[1] Computed from Table 7 of *Spelling Survey, Pittsburgh Public Schools*. Bulletin No. 5, Department of Research and Measurement.

achievement was at a point two-fifths of the way through grade VIII-B, but all subjects in this average B-score were given equal weight. This is unsound, because we know that inability to read and to solve problems in arithmetic correlates much higher with school failure than inability to write. Combining his mental age with his achievement in reading and his arithmetical reasoning, he was easily eligible for grade IX-B. But we must recall Frank had never had a day's group instruction in his life. Could he, therefore, go into a class of 35 pupils and get his share of the instruction? This fact that he had never had any group instruction was pointed out to the parents. With their full agreement, he was placed in the high section of grade VIII-B in one of our junior high schools. His career in the junior high school has been very satisfactory. For grades VIII-B, VIII-A, IX-B, and IX-A in junior high school he received one A, twelve B's, seventeen C's, three D's, and no E's (E is a failing mark, A and B are honor marks). He was not tardy during the four semesters. His record in the senior high school for the tenth year shows two A's, six B's, nine C's, four D's, and no E's.

Had Frank been placed in the fifth grade among pupils with a mental level much lower than his own, he probably would have been discouraged and have become—as many others have—a lazy loafer. Placed as he was in a grade of mental peers, his mettle was challenged because he was kept working to capacity practically all the time. It is worthy of note in this connection that much of the so-called stupidity is not mental deficiency but lack of interest. Effort is directly proportional to the intensity of interest. When we are diagnosing a case and applying a remedy, therefore, it is necessary to vary the appeal and to differentiate the methods to suit the individual capacities and aptitudes. It is essential in diagnosing a case that we discover these individual capacities and make provision therefor.

Ida graduated at the age of 13 years 4 months from grade VIII-A in one of our city schools. Just at that time—the end of the first semester—her parents moved to one of the outlying boroughs which did not have semi-annual promotions. The parents desired that she enter the high school at once, but were

confronted with the problem of what grade she should enter. Upon consultation with the principal of the school the father was informed that no pupil had ever entered that school in the middle of the year and that he felt it would be unwise for her to try the second semester without having had the work of the first semester. The father was a man who, as we say, "feels his oats," and constantly advertised the fact in his conversation. He had been a school teacher and presumably of the type to which the lawyer referred when he said, "You can tell a school teacher wherever you see him, but you can't tell him much." The father incidentally mentioned that Ida had made a score of 135 on the Otis Test. The principal, being quite well versed in educational measurement, knew that if she had made a score of 135 on the Otis Test, whether it was the raw score or the intelligence quotient, the girl was bright. He agreed that, if the Department of Research in the city would certify that Ida could do the work of the second semester, he would give her a chance. Ida, along with all the other VIII-A pupils in the city, had just taken the Otis General Intelligence Scale, in which she made a score yielding an intelligence quotient of 135. She was at once given the Stanford Revision of the Binet Test, and recorded a mental age of 17 years and 10 months, with an I.Q. of 134. She passed every step in the average adult and superior adult except the vocabulary in the latter.

She was given the Monroe Reading Test (not revised); her rate score was 162, and her comprehension score 46. The norms for grade VIII-A are 108 for rate and 27.5 for comprehension. Thus it was seen that both her speed of reading and ability to comprehend thoughtful material were markedly above the standard for grade VIII-A. She was also given the Thorndike-McCall Reading Scale on which she scored a reading quotient of 141, showing again that she rated exceptionally superior in ability to read, being surpassed by only 3.5 percent of the elementary-school pupils. An examination of her intelligence and achievement record card, furnished in connection with the VIII-A intelligence test, showed that the Teachers' Estimate of General Ability was "A." This estimate is a combined judgment of all the

teachers who have had the pupil for the past two years plus the judgment of the principal. An examination of her marks in the several school subjects showed thirty-six A's, twelve B's, and no C's nor any mark below C. In fact, all her marks were honor marks. Her health and physical condition were quite satisfactory. Her height was one and one-half inches taller than the average girl of her age. Her weight was fourteen pounds heavier than girls of her age. During the past two years she had been absent but one day, and no tardy marks whatever were recorded against her. She was marked by the teachers on the intelligence and achievement record card as superior in industry, initiative, leadership, dependability, and punctuality. Fewer tests were given to Ida, because a complete school record was available.

Taking it all in all, her record showed that she not only had ability but that she had been using it. It was recommended by the Department of Research that she be placed in grade IX-A. A little hesitation was felt with regard to algebra because it was feared that she might not be able to pull through the second semester without having had the first-semester's work. She finished the year in algebra, however, with a mark of 91 percent. During her three and one-half years in the high school, she had no mark in any subject lower than 91 percent. She graduated this June with honor.

By careful evaluation of the reliable data at hand, Ida was saved a semester of loafing. She showed on the intelligence tests that she had the *native ability* to do the second semester's work in the high school without having previously had the first semester. Furthermore, the tests together with her elementary-school record in the school subjects showed that she was achieving up to her capacity. *Capacity plus achievement* is a safe criterion for prognosis.

The few instances cited above are typical cases illustrating how modern scientifically constructed standardized tests together with adequate records enable a Department of Research, a principal, or a teacher to diagnose a case and to apply the remedy. Either procedure, without adequate scientific data, would be hazardous.

# THE RELATION BETWEEN RATE AND QUALITY IN EDUCATIONAL MEASUREMENT[1]

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How to deal with rate and accuracy scores in educational measurement is a persistent and annoying problem. The solution favored by many measurement men resembles the characteristic response of the ostrich to danger, burying one's head in the sand on the theory that "out of sight" is "out of mind." Many investigators count only the number of problems right, or use the rate scores alone, or ignore both rate and accuracy contenting themselves with a measure of difficulty. Yet it is easy to prove that whether we recognize it or not, the problem of securing and interpreting both rate and accuracy scores is always present whatever the type of test used.

Many of our educational measurements are made with either performance scales or rate tests. The former consist of material graded in difficulty and are designed to measure the level of development attained. The latter are constructed from material

TABLE I. COMPARISON OF THE SCORES OF PAIRS OF INDIVIDUALS SELECTED TO SHOW DIFFERENCES IN DEVELOPMENT AND SKILL IN READING

| INDIVIDUALS | PERFORMANCE SCALES | | RATE TESTS | | | |
|---|---|---|---|---|---|---|
| | Stanford | Thorndike McCall | Detroit Rate | Kitten Series | | Comprehension |
| | | | | Rate | Questions | |
| A | 124 | 42 | 140 | 170 | 60 | 92 |
| B | 124 | 43 | 126 | 144 | 30 | 50 |
| C[a] | 181 | 52 | 196 | 251 | 50 | 98 |
| D[a] | 142 | 38 | 194 | 194 | 50 | 97 |
| E | 150 | 48 | 142 | 175 | 50 | 93 |
| F | 151 | 46 | 256 | 296 | 75 | 75 |

[a] Intelligence quotient of C was 115, of D, 91.

[1] Read before the joint session of the National Society of College Teachers of Education and the Educational Research Association, Wednesday, February 27, 1924, at Chicago.

of uniform difficulty and are used to measure skill. The characteristic differences in the construction of the two tests given in Figure 1 is evident on inspection. That scores in such tests measure different types of ability is clearly shown by the comparisons presented in Table I.

FIGURE 1. COMPARISON OF PERFORMANCE SCALE AND RATE TEST IN READING

**Thorndike-McCall Reading Scale**

For the **Understanding of Sentences**

*Read this and then write the answers. Read it again if you need to.*

Nell's mother went to the store on Water Street to buy ten pounds of sugar, a dozen eggs and a bag of salt. She paid a dollar in all. Nell and Joe went with her. On the way home on Pine Street, they saw a fire-engine with three horses.

1. Were the names of the two children who went to the store

2. How much sugar was bought?

6. How many sisters had Beauty?

six children, three boys and three girls.

12. Must the soil be kept packed tight all over the garden?

In these ways the soil is loosened.

20. Did a wasp sting the outlaw?

Like a wasp it buzzed and stung him!

28. What word could have been used instead of verge?

Gaza stands upon the verge of the desert,

35. What contrast is drawn in the poem?

38. What action is likened to scientific forestation?

They are as trees planted by the forester,

DETROIT PUBLIC SCHOOLS

**Department of Educational Research**

**Silent Reading Test No. 2**

Form A

READING SERIES B

When the day of the party came, Daddy planted a May-pole and Mother tied it with gay-colored ribbons. There were to be games and dances on the grass and a delicious supper, with a basket full of flowers for every child.

1. Were the children to have anything to eat? Yes No
2. Were they going to play on the grass? Yes No
3. Were they going into the house to dance? Yes No
4. Were the baskets to be full of flowers? Yes No
5. Was it Daddy who tied the ribbons to the pole? Yes No

Under the big tree in front of the house was a large box. Mother covered it with a rug and put a little chair on it. This was the throne on which the May-queen was to sit.

6. Was the large box under a big tree? Yes No
7. Was the big tree back of the house? Yes No
8. Was it the queen who put the chair on the rug? Yes No
9. Was it Daddy who put the rug on the box? Yes No
10. Was the queen to sit on the little chair? Yes No

The queen was to wear a wreath of flowers, tied with ribbons, for a crown and over it a veil. Also, she was to carry a beautiful May-basket and lead the children in the dance around the May-pole.

11. Was Mother to wear the wreath of flowers? Yes No
12. Was the queen to lead the children's dance? Yes No
13. Was the veil to be won by the queen? Yes No
14. Was the queen to carry a May-basket, also? Yes No
15. Was the crown for the queen made of gold? Yes No

NOTE: Each question in the Thorndike-McCall scale is more difficult than the one before it. Each group of five questions in the Detroit test is equal in difficulty to every other group. The first test measures development—how difficult material the child can read. The second test measures skill—how well the child can handle material of the given degree of difficulty.

By both the Stanford and the Thorndike-McCall reading scales individuals A and B have equal development of reading ability, but A is able to read the simple material in the rate tests much more skillfully than B. Individuals C and D on the other hand have equal skill in reading the simple material as shown by the scores in the rate tests, but C has attained a higher level of development than D, if judgment is based on the scores in the

performance scales. The mentalities of the two individuals as measured by their intelligence quotients are of the same relative magnitude as their scores in the performance scales. This higher correlation between intelligence and development as measured by performance scales when contrasted with the correlation between intelligence and skill as measured by rate tests —which is a constant feature of scores in many types of performance scales—raises the question of the validity of this type of measuring instrument as a means of determining ability. The methods followed in their construction, use, and scoring may make them chiefly intelligence tests. Of course, in reading, if one accepts Thorndike's fundamental definition of reading ability as the ability to do the "stunts" called for in his performance scale, it is the validity of the intelligence tests which must be questioned. But for most of us who desire to have valid tests for the type of ability which is already labelled "reading ability" in everyday life, it is the validity of the performance scale in reading that needs investigation. Further discussion of this point, however, is reserved for a later paper.

The problem to which I wish to direct your attention is that represented by the rate scores of individuals E and F. They are equal in ability according to the scores in the performance scales, but the measures of skill are difficult to interpret. Judged by the rate tests alone, F is much more skillful than E, but judged by degree of comprehension, their relative abilities are exactly reversed; for E is the more skillful. A study of many such cases leads to the conclusion that individuals E and F are really equally skillful as well as equally developed; that the reason for the differences in their rate scores is that E has chosen to read slowly and carefully, while F has read rapidly and carelessly. In other words, their scores are not comparable because they are not *measures secured under similar conditions.* Before the relative abilities of these two individuals can be determined reliably their scores must be corrected to standard conditions. For instance, if it should turn out that their skills under comparable conditions are best represented by one-half the sum of the rate and quality scores, 71.5 and 75 respectively, then F must be

judged to be only slightly more skillful (5 percent) than E. This problem of interpreting rate and quality scores will be considered in this paper.[2]

Handwriting presents an admirable field for such study; both the rate and quality of a performance may be measured easily and objectively. In this paper by rate will be meant number of letters written per minute and by quality, scores in terms of the Ayres scale. The rate scores are mid-scores of the number of letters written in three consecutive intervals.

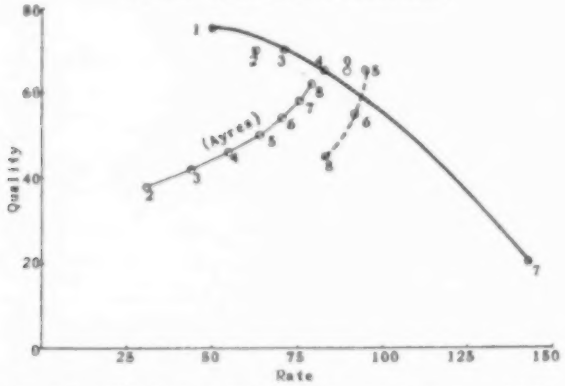
The scoring for quality was done by experts. Each paper was scaled by two scorers independently both in a group of papers from many individuals, and in the group of papers from one individual. By arranging the papers in order of merit before assigning scale values, and by having all variations of more than 5 points in the independent scorings checked by conference or reference to a third scorer, the reliability of the scoring was kept high. In a tabulation of 905 differences in scoring the median deviation was 1. The variations shown in the tables and graphs below are, therefore, in no way to be ascribed to faulty scoring.

If we measure the ability of a single individual under a great variety of conditions, we secure scores which reveal plainly the process of adjustment which takes place as the individual accommodates himself to the varying conditions. This is shown in Figure 2 and Table II.

In this case the subject is a mature individual who has been writing for twenty-five years. Under such conditions it is not likely that his actual ability in handwriting was affected to any marked degree by the series of tests. The ninth test, given after a lapse of eighteen months, proves that the subject under similar conditions performs in a constant fashion. It is probable, therefore, that the entire series of scores would be reproduced by him as often as he might be given the entire series of tests under identical conditions. That is, all the scores given in Table II are expressions of exactly the same ability in handwriting.

[2] The investigations from which most of the data reported in this study are taken were made possible by a grant from the Commonwealth Foundation. Additional data supporting the points made in this paper will appear in the formal report of the investigation.

FIGURE 2. HANDWRITING SCORES OF ONE INDIVIDUAL TESTED UNDER VARYING CONDITIONS




Note: Heavy solid line, individual adjustment curve. Light solid line, average development curve for American children based on country-wide averages (Ayres). Broken line, a curve of similar form and direction based on three selected tests to illustrate the possibility of erroneous conclusions unless testing conditions as well as scores are considered in arriving at conclusions.

TABLE II. SCORES OF ONE INDIVIDUAL IN HANDWRITING MEASURED BY SEVERAL TESTS UNDER VARYING CONDITIONS

| No. | Test Material | Conditions | Rate | Quality |
|---|---|---|---|---|
| 1 | Mary had a little lamb..... | Write as well as possible, disregarding rate..... | 51 | 75 |
| 2 | This is a sample of my best writing | Prepare a sample of best writing..... | 63 | 70 |
| 3 | Standard paragraph..... | Copy as well as possible, disregarding rate..... | 72 | 70 |
| 4 | Standard paragraph..... | Copy rapidly and well..... | 84 | 65 |
| 5 | Mary had a little lamb.... | Write rapidly and well..... | 96 | 65 |
| 6 | Lincoln's Gettysburg speech | Copy rapidly and well..... | 92 | 55 |
| 7 | Standard paragraph..... | Copy as fast as possible, disregarding quality..... | 143 | 20 |
| 8 | Standard paragraph..... | Copy rapidly and well, standing holding paper in hand. | 83 | 45 |
| 9 | Standard paragraph..... | Copy rapidly and well..... | 90 | 65 |

NOTE: Tests 1-8 were given within an hour. Test 9 was given eighteen months later.

Change in score, therefore, indicates not change in ability but change in a complex performance of which ability is but one factor. The problem, then, is (1) to analyze performance in handwriting into factors, (2) to eliminate all factors from performance except those which represent ability, and (3) to express ability in standard terms.

To study the variations in the performances of children in handwriting under varying conditions, a number of classes, approximately fifteen hundred children in all, were given during one week the standard handwriting test used in the Detroit schools (1) under standard or normal conditions (N), (2) under conditions which emphasized rate at the expense of quality (fast or F), and (3) under conditions which emphasized quality at the expense of rate (slow or S). In one class, the teacher herself first gave the handwriting test under standard conditions, then during the following ten days the class was visited by three different teachers-in-training from Detroit Teachers College each of whom gave the class three trials of the test. The second examiner gave the tests in the order, normal, slow, and fast; the other two examiners gave the tests in the order, normal, fast, and slow. Finally the teacher herself repeated the test under standard conditions. The series of tests thus yielded eleven measures of the handwriting performances of these children within ten days. A typical series of scores for one individual is given in Table III and Figure 3.

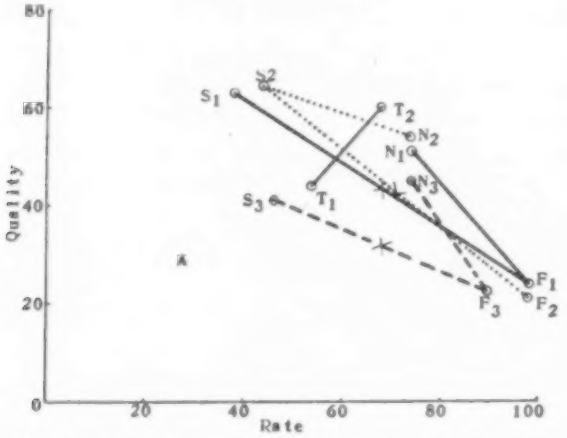
Under change of conditions the rate varied from 38 to 98 letters per minute, and the quality varied from 64 to 21, Ayres. That is, in general, for any one individual increase in rate is accompanied by a corresponding decrease in quality, and vice versa. From the data given, however, no single "law" can be formulated, nor any single general correction formula derived.[3]

[3] For instance, if the Gates' formula for reducing rate and quality to a single score $\sqrt{\text{rate} \times \text{quality}}$ (Gates, A. I. "The Relation of Quality and Speed of Performance: A Formula for Combining the Two in the Case of Handwriting." *Journal of Educational Psychology*, 15:129-44, March, 1924) is applied to the data of Table III using Kelley's equivalents (page 119, *Statistical Methods*. New York, Macmillan Company, 1923) to transmute Ayres to Thorndike scores, the computed ability will be found to vary from 26.9 to 44.1.

An individual may increase in both rate and quality, as, for example, from the first to the second test given by the teacher.

The statement was made that the individual selected was typical. The results show, of course, every degree of individual

FIGURE 3. SCORES OF ONE INDIVIDUAL IN HANDWRITING ELEVEN TESTS



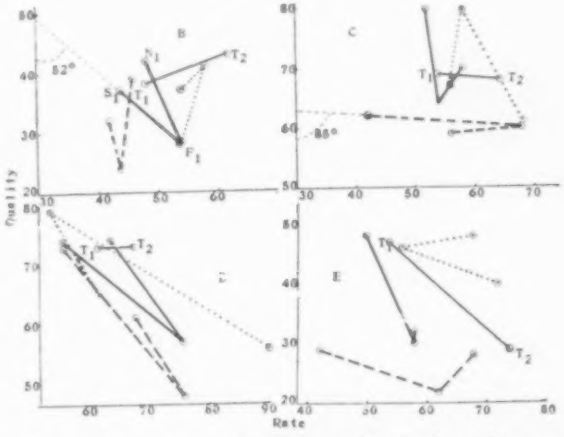

Note: *N* means test given under normal or standard conditions; *F*, test given emphasizing speed of writing at expense of quality; and *S*, the test given emphasizing quality at expense of speed. 1, 2, 3 mean first, second, and third examiners. $T_1$ and $T_2$ means teacher's own test before and after the visit of the three special examiners. The tests used were identical throughout the ten-day period.

TABLE III. SCORES OF A TYPICAL INDIVIDUAL IN A SERIES OF ELEVEN TESTS IN HANDWRITING WITHIN TEN DAYS

| Test No. | Examiner | Conditions | Scores | | Sum of Rate and Quality | Midpoint Slow–Fast | |
|---|---|---|---|---|---|---|---|
| | | | Rate | Quality | | Rate | Quality |
| 1 | Teacher | Standard | 54 | 44 | 99 | | |
| 2 | Student A | Standard | 74 | 51 | 125 | | |
| 3 | Student A | Fast | 98 | 24 | 122 | 68 | 44 |
| 4 | Student A | Slow | 38 | 63 | 101 | | |
| 5 | Student B | Standard | 74 | 54 | 128 | | |
| 6 | Student B | Slow | 44 | 64 | 108 | 71 | 43 |
| 7 | Student B | Fast | 98 | 21 | 119 | | |
| 8 | Student C | Standard | 74 | 45 | 119 | | |
| 9 | Student C | Fast | 90 | 22 | 112 | 68 | 32 |
| 10 | Student C | Slow | 46 | 41 | 87 | | |
| 11 | Teacher | Standard | 68 | 60 | 128 | | |

variation, both in slant of lines, amount of adjustment, and character of response to the change in conditions. For instance, four other members of this same class made the responses shown in Table IV and Figure 4.

FIGURE 4. INDIVIDUAL VARIATION IN RESPONSE TO CHANGING CONDITIONS




Note: The curves of four other individuals tested at the same time and under the same conditions as individual A. For B and C the angle of slant of the adjustment line is shown. The lengths of these adjustment lines are B 13, C 26. N, F, and S have been omitted except in the case of the first series of tests of B. Note that the order in the second trial (dotted line) was normal, slow, fast.

Individual B represents a case of extreme variation. For the first examiner he responded in the usual manner. For the second examiner, his responses were peculiar, since rate and quality varied directly instead of inversely. For the third examiner, the response was normal but at a low level. Individuals C, D, and E represent other types of responses. No consistent patterns of response could be discovered except that the class averages for the third examiner are slightly lower than for the other examiners. Many children made markedly lower responses to this examiner, but nearly as many others made the same or better responses, so that on the average the effect of the differences in examiners was practically negligible.

The change in the scores from the initial to the final test given by the teacher is significant. In all cases the final test was higher in rate and sometimes higher in quality, sometimes lower. In spite of the lower response made to the third examiner,

TABLE IV. SCORES OF FOUR INDIVIDUALS IN A SERIES OF ELEVEN TESTS IN HANDWRITING TAKEN AT THE SAME TIME AND UNDER THE SAME CONDITIONS AS THOSE GIVEN IN TABLE III

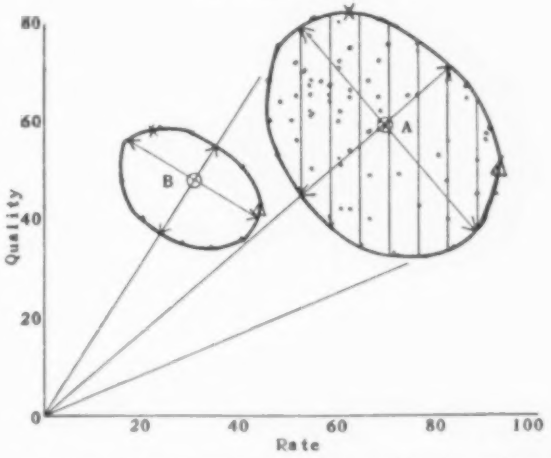
| Test | Conditions | Individuals | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | B | | C | | D | | E | |
| | | Rate | Quality | Rate | Quality | Rate | Quality | Rate | Quality |
| 1 | T | 48 | 38 | 54 | 69 | 62 | 73 | 54 | 47 |
| 2 | N | 48 | 42 | 58 | 70 | 64 | 74 | 58 | 32 |
| 3 | F | 54 | 28 | 54 | 64 | 76 | 57 | 58 | 30 |
| 4 | S | 44 | 37 | 52 | 80 | 56 | 74 | 50 | 48 |
| 5 | N | 54 | 37 | 56 | 67 | 62 | 65 | 68 | 48 |
| 6 | S | 58 | 41 | 58 | 80 | 54 | 79 | 56 | 46 |
| 7 | F | 54 | 28 | 68 | 61 | 90 | 56 | 72 | 40 |
| 8 | N | 46 | 39 | 56 | 59 | 68 | 61 | 68 | 28 |
| 9 | F | 44 | 24 | 68 | 60 | 76 | 48 | 62 | 22 |
| 10 | S | 42 | 32 | 42 | 62 | 58 | 73 | 42 | 29 |
| 11 | T | 62 | 43 | 64 | 68 | 68 | 73 | 74 | 29 |

many children the next day made for their teacher high scores in both rate and quality. In general, many scores in the teacher's initial test were lower and in the final test higher than in many of the tests given by the strange examiners.

The fact, that the performance of an individual in a handwriting test is subject to such a wide range of variation under varying conditions and that each individual's response to the conditions of a particular test is peculiar to that individual, has an important bearing both on the giving of the tests and on the interpretation of the results. Until it is possible to standardize testing conditions so that all individuals respond to a test in substantially the same manner, it would appear to be necessary to give several trials of a test under varying conditions to determine the manner in which an individual is responding; also it would seem essential that the scores finally selected to represent the abilities of the various individuals be chosen on the basis of criteria which make the scores truly comparable.

For instance, if a sufficiently large series of tests were given to map out completely the possible field of variation for one individual, the central point of the field might be taken as the score representing his ability. In Figure 5 the actual scores

FIGURE 5. HYPOTHETICAL ILLUSTRATION OF INDIVIDUAL FIELDS OF VARIATION



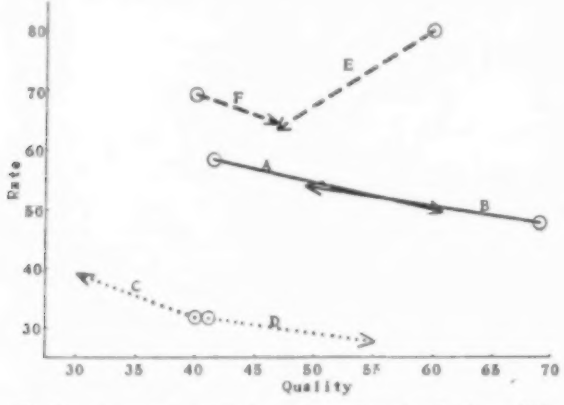

Note: Individual A may make any score within the ellipse. The lines with arrow heads represent the two factors, adjustment and effort, which determine the ellipse. The vertical lines have no meaning for present purposes. B represents the field of variation of a less capable individual than A. To compare the relative abilities of A and B comparable scores must be used, as the maximum rate scores (triangles), maximum quality scores (crosses), or the central scores (circles). If the score represented by the cross of one were compared with the triangle of the other, the relative abilities of the two individuals would be misrepresented.

from some thirty odd tests have been supplemented by twice as many hypothetical scores to give a graphic presentation of what is meant by an individual's field of variation. A second hypothetical field is shown in outline. The circles at the centers of these fields represent comparable measures of ability in the sense that each bears the same relation to its field that all other such measures do to their fields. The crosses, representing the highest quality scores, and the triangles, representing the highest rate scores, are two other comparable measures. Consideration of

the problem of determining which of the infinite number of possible comparable measures it is best to use will be reserved for another time. For this paper it will be assumed that the mid-point is such a best measure, and that when "fast" and "slow" tests are given the score midway between the two scores is the best approximation available for the true mid-point, and that when several such "fast-slow" series are given, the mid-point of the geometrical figures formed by joining the mid-point of each series is the best measure.

These assumptions make it possible to show graphically what happens when non-comparable scores are compared, as is done ordinarily *whenever* scores from tests under a single set of conditions are compared. In Figure 6, circles represent actual scores

FIGURE 6. EFFECT OF CORRECTION TO STANDARD CONDITIONS



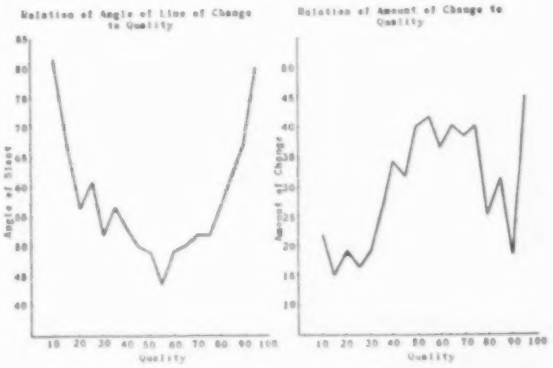

Note: Circles represent scores in tests under standard conditions. Arrow heads represent mid-points in adjustment lines. Quality is graphed on the *X*-axis in this figure because horizontal comparisons seemed to be more easily comprehended than vertical ones.

in single trials of tests given under standard conditions, while the points of arrow-heads represent mid-points between the scores of "fast" and "slow" tests. Individuals A and B, for instance, appeared to differ in ability by about 10 points in rate and 30 points in quality, but B was the more able. When, however, their fields of variation had been explored and the mid-

points selected, they were found to differ less than 5 points in rate and 10 in quality, and A was better than B. In similar fashion C and D, who by a single trial of the standard test appeared to have almost identical scores, really differed about 10 points in rate and 25 in quality when comparable scores were used. On the other hand, E and F, who appeared to differ in ability about 10 points in rate and 20 in quality, were really of almost identical ability on the basis of comparable scores. These are, of course, selected cases, yet they indicate that more attention than in the past will need to be paid to determining the comparability of scores.

The statement has been made that mere inspection of the graphs of individual scores revealed extreme individual differences. To determine the general tendencies, however, the angle of slant and the length of the "fast-slow" line were measured for approximately a thousand individuals in grades III-VIII. Angle

FIGURE 7


Relation of Angle of Line of Change to Quality
Angle of Slant
Quality
Relation of Amount of Change to Quality
Amount of Change
Quality

Note: The conclusion to be drawn from these figures is that, in general, poor writers make adjustments which are small in amount and nearly perpendicular to the quality axis (change in rate only). As ability in handwriting increases the angle of adjustment decreases and the amount increases, the maximum occurring at approximately quality 55. At this point the angle of adjustment is approximately 45 degrees and the amount of adjustment from most rapid to best writing 42 points (30 letters per minute and 30 units of quality—Ayres). From this point on, the character of the change reverses until for good writers as for poor writers the angle of adjustment is large and the amount of adjustment small.

of slant[4] indicates the type of adjustment made while the length of the "fast-slow" line measures the extent of the adjustment. For instance, the amount of the adjustment for B is 13, for C is 26 (Figure 4).

Tabulation of these two measurements, in relation to quality of writing as measured by the mid-point of the "fast-slow" line, gave the facts presented in Table V and Figure 7.

In general, those who write well or poorly tend to make small adjustments in rate only (average amount of adjustment a minimum, average angle of adjustment approximately 80°), while, for middle values in quality, the angle of slant tends to approximate 45°. These relationships are, however, apparent in averages only. For any one quality many exceptions occur and for individuals tested under a variety of conditions proof of

TABLE V. RELATION BETWEEN QUALITY OF HANDWRITING, AND (1) THE ANGLE BETWEEN ADJUSTMENT LINE AND THE QUALITY AXIS, AND (2) THE AMOUNT OF THE ADJUSTMENT MADE FROM FAST TO SLOW WRITING. MAGNITUDE OF ADJUSTMENT TAKEN AS $\sqrt{(\text{Difference in Rate})^2+(\text{Difference in Quality})^2}$. GRADES III-VIII.

| Quality of Writing (Ayres) | Number of Cases | Median Angle of Adjustment | Median Amount of Adjustment | Quality of Writing (Ayres) | Number of Cases | Median Angle of Adjustment | Median Amount of Adjustment |
|---|---|---|---|---|---|---|---|
| 95 | 1 | 80 | 45 | 40 | 116 | 53 | 34 |
| 90 | 6 | 67 | 18 | 35 | 104 | 56 | 26 |
| 85 | 5 | 62 | 31 | 30 | 81 | 52 | 19 |
| 80 | 18 | 57 | 25 | 25 | 51 | 61 | 17 |
| 75 | 34 | 52 | 40 | 20 | 18 | 57 | 19 |
| 70 | 59 | 52 | 38 | 15 | 10 | 67 | 15 |
| 65 | 80 | 50 | 40 | 10 | 9 | 82 | 22 |
| 60 | 112 | 49 | 37 | | | | |
| 55 | 95 | 44 | 42 | Total | 1020 | | |
| 50 | 109 | 49 | 40 | | | | |
| 45 | 112 | 50 | 32 | Median | 50.4[a] | 49 | 40 |

[a] Median quality.

NOTE: Probable true mid-value of handwriting allowing for larger numbers of children in lower grades, 55 Ayres.

Probable corresponding angle of slant 45°.

Probable corresponding adjustment 42, or a change of 30 letters per minute in rate and a change of 30 points in quality.

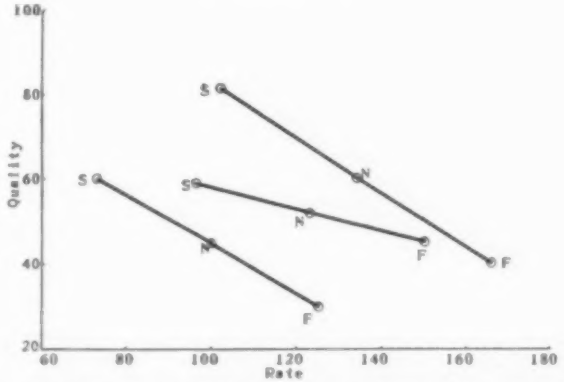
[4] See B and C, Figure 4, in which the angle of slant is indicated for two of the adjustment lines.

many different types of adjustments are secured. For instance, Individual A, already referred to, shows three types of adjustment lines.

More significant perhaps are the types of responses shown graphically in Figure 8 in which all three tests fall perfectly in one straight line. Apparently such curves are obtained more frequently from adults than from children.

In attempting to explain the data so far presented, the writer has been led to adopt certain hypotheses, the truth or falsity of

FIGURE 8. STRAIGHT LINE ADJUSTMENT CURVES IN HANDWRITING

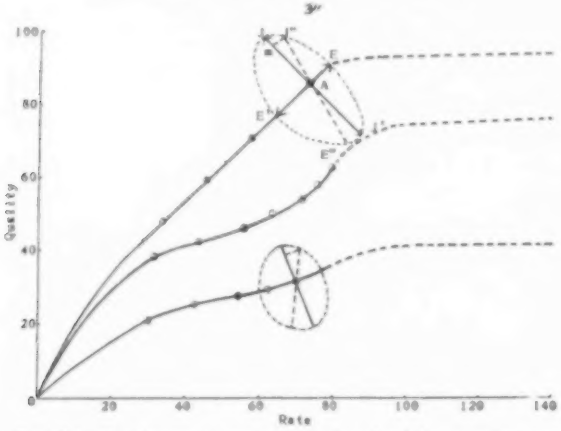



Note: Distinctive type of adjustment curve frequently secured from adults and sometimes from children. It probably represents adjustment only, effort being held constant.

which he is now attempting to establish by further experimentation. The fundamental thesis is that performance in a handwriting test is a complex to which many factors contribute. The major factors seem to be (1) ability which in the writer's thinking represents the resultant effect of training and maturity upon heredity, (2) the effort exerted, and (3) the adjustment made to conditions. The relation of these factors to each other and to performance is shown graphically in Figure 9. The individual's ability or the center of his field of variation is represented by the circle at A. The line from the origin through this

circle represents this individual's growth curve under training. The fact, that the line at each grade represents more rapid and better quality of writing than the average development curve (Ayres), indicates that this individual has a superior native endowment for handwriting. The dotted portion of the curve

FIGURE 9. HYPOTHETICAL DEVELOPMENT CURVES AND FIELDS OF VARIATION IN HANDWRITING




Note: Possible development curves for handwriting; upper curve, gifted individual; middle curve, average individual; lower curve, individual of inferior capacity. The middle curve is based for the most part upon Ayres standard scores by grades. The actual form of individual development curves is not known but the guess of the writer is that they approximate the upper rather than the other two curves. In the field of variation of the superior individual, JJ′ represents the pure adjustment curve, EE′ the pure effort curve, and J″E″ an adjustment line compounded from a pure adjustment of Am and a pure effort of mJ″.

shows his probable future development under adequate training.

For his present ability and *as long as effort is constant* the score made by the individual in any test will fall along the adjustment line JAJ′. That is, the individual will more or less unconsciously adjust himself to the test situation, writing rapidly or well in accordance with his understanding of what the test situation demands. But whether he emphasizes rate or quality, the two traits will vary inversely so exactly that knowing one score the other may be computed by formula. The condition

of the adjustment line in the figure is that the sum of rate and quality is a constant. J and J′ represent the extreme limits of the adjustment that the individual is capable of making voluntarily. This range probably varies from individual to individual.

Under the appeal of various incentives, however, the individual may exert more or less effort. For instance, if a teacher whom he likes asks him to show how much better he can do for her than for a stranger, he may concentrate upon the task in hand so effectively that both rate and quality increase. If, on the other hand, he is kept after school and given the test as a punishment for disturbing the writing period by laughter, he may put forth very little effort so that both rate and quality decrease.

In the figure the line EAE′ represents the effect of the effort factor. It is at right angles to the adjustment line and the part E′ A is longer than the part EA. Theoretically E′ should fall at the origin since the individual may refuse to write anything at all for the teacher.

Changes in adjustment and effort may occur simultaneously and ordinarily do. Thus, the line J″AE″ represents an adjustment Am and an effort mJ″. The field of variation is thus an approximate ellipse; theoretically it might approximate an irregular sector of a circle. The problems of determining the precise relations between these factors and of developing a technique for their exact measurement seem fundamental for progress in educational science.

As an illustration of the need for such concepts in the interpretation of data, it may be profitable to give a complete series of scores for one individual from the earliest grades in which he was tested (III-B) to the present (VI-A) and a series of tests of present ability under a variety of conditions. These are recorded in Table VI and graphically represented in Figure 10.

The tangled lines of the figure make evident the need for a method of reducing scores for rate and quality to a single measure of ability. In the absence of any means of determining from the data at hand what the relation is, the writer will assume,

TABLE VI. SCORES OF ONE INDIVIDUAL IN HANDWRITING TESTED AT DIFFERENT TIMES AND UNDER DIFFERENT CONDITIONS

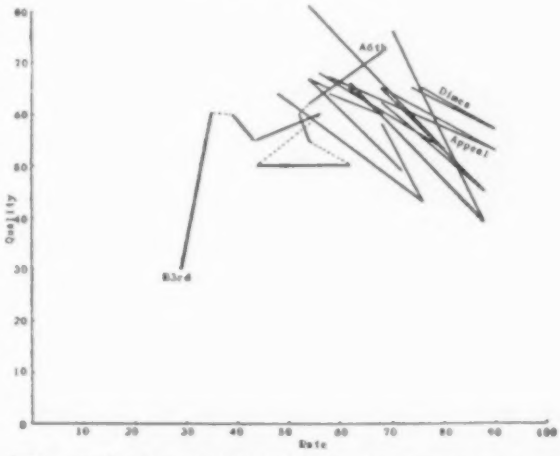
| Test no. | Date | Grade | Examiner | Conditions | Scores | | |
|---|---|---|---|---|---|---|---|
| | | | | | Raw | | Corrected |
| | | | | | Rate | Quality | |
| 1 | 9-22-20 | III-B | Teacher | Standard | 29 | 30* | 29.5 |
| 2 | 1-11-21 | III-B | Teacher | Standard | 35 | 60* | 47.5 |
| 3 | 2- 9-21 | III-A | Teacher | Standard | 39 | 60* | 49.5 |
| 4 | 5-25-21 | III-A | Teacher | Standard | 43 | 55* | 49 |
| 5 | ..... | IV-B | Teacher | Standard | ..... | ..... | ..... |
| 6 | ..... | IV-B | Teacher | Standard | ..... | ..... | ..... |
| 7 | ..... | IV-A | Teacher | Standard | ..... | ..... | ..... |
| 8 | ..... | IV-A | Teacher | Standard | ..... | ..... | ..... |
| 9 | 9-21-22 | V-B | Teacher | Standard | 44 | 55* | 49.5 |
| 10 | 1- 9-23 | V-B | Teacher | Standard | 56 | 60* | 58 |
| 11 | 2- 6-23 | V-A | Teacher | Standard | 44 | 50* | 47 |
| 12 | 5-22-23 | V-A | Teacher | Standard | 62 | 50* | 56 |
| 13 | 9-18-23 | VI-B | Teacher | Standard | 54 | 55* | 54.5 |
| 14 | 1-15-24 | VI-B | Teacher | Standard | 52 | 60* | 56 |
| 15 | 2-12-24 | VI-A | Teacher | Standard | 54 | 62 | 58 |
| 16 | 5-27-24 | VI-A | Teacher | Standard | 68 | 72 | 70 |
| 17 | 1-14-24 | VI-A | Teacher | Standard | 54 | 65 | 58 |
| 18 | 1-16-24 | VI-A | Stranger 1 | Standard | 68 | 58 | 63 |
| 19 | 1-16-24 | VI-A | Stranger 1 | Fast | 76 | 43 | 59.5 |
| 20 | 1-16-24 | VI-A | Stranger 1 | Slow | 48 | 64 | 56 |
| 21 | 1-18-24 | VI-A | Stranger 2 | Standard | 58 | 65 | 61.5 |
| 22 | 1-18-24 | VI-A | Stranger 2 | Slow | 54 | 67 | 60.5 |
| 23 | 1-18-24 | VI-A | Stranger 2 | Fast | 72 | 49 | 60.5 |
| 24 | 1-21-24 | VI-A | Stranger 3 | Standard | 58 | 64 | 61 |
| 25 | 1-21-24 | VI-A | Stranger 3 | Fast | 68 | 60 | 64 |
| 26 | 1-21-24 | VI-A | Stranger 3 | Slow | 62 | 65 | 63.5 |
| 27 | 1-23-24 | VI-A | Teacher | Standard | 54 | 71 | 62.5 |
| 28 | 6-10-24 | VI-A | Teacher | Standard | 56 | 68 | 62 |
| 29 | 6-10-24 | VI-A | Teacher | Fast | 80 | 53 | 66.5 |
| 30 | 6-10-24 | VI-A | Teacher | Slow | 54 | 81 | 69.5 |
| 31 | 6-10-24 | VI-A | Teacher | Effort—Personal Appeal—Standard | 68 | 65 | 66.5 |
| 32 | 6-10-24 | VI-A | Teacher | Fast | 90 | 53 | 71.5 |
| 33 | 6-10-24 | VI-A | Teacher | Slow | 58 | 67 | 62.5 |

* Teacher's scoring unchecked.

TABLE VI. (*Continued*)

| Test no. | Date | Grade | Examiner | Conditions | Scores | | |
|---|---|---|---|---|---|---|---|
| | | | | | Raw | | Corrected |
| | | | | | Rate | Quality | |
| 34 | 6–11–24 | VI-A | Stranger 4 | Standard | 68 | 65 | 66.5 |
| 35 | 6–11–24 | VI-A | Stranger 4 | Fast | 88 | 45 | 66.5 |
| 36 | 6–11–24 | VI-A | Stranger 4 | Slow | 68 | 62 | 65 |
| 37 | 6–11–24 | VI-A | Stranger 4 | Effort—Money | 74 | 65 | 69.5 |
| 38 | 6–11–24 | VI-A | Stranger 4 | Effort—Fast | 90 | 57 | 73.5 |
| 39 | 6–11–24 | VI-A | Stranger 4 | Effort—Slow | 76 | 65 | 70.5 |
| 40 | 6–11–24 | VI-A | Stranger 4 | Standard | 70 | 76 | 73 |
| 41 | 6–11–24 | VI-A | Stranger 4 | Fast | 88 | 39 | 63.5 |
| 42 | 6–11–24 | VI-A | Stranger 4 | Slow | 62 | 66 | 64 |

FIGURE 10. GRAPH OF FORTY-TWO TESTS OF ONE INDIVIDUAL IN HANDWRITING




Note: The record of one individual from the III-B to VI-A in the routine handwriting tests of the city. The series in which a personal appeal was made by the teacher and the series in which the children were paid a dime each time they exceeded their previous scores in both rate and quality are indicated. The fourth-grade records are missing.

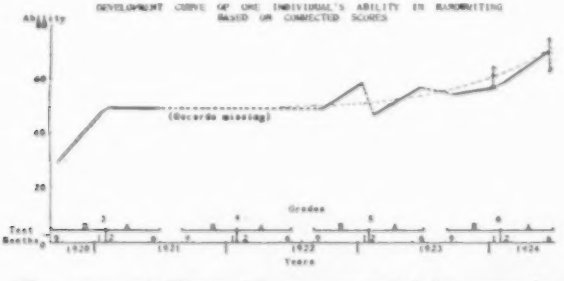
solely for purposes of hypothetical illustration, that the true development curve for ability in handwriting is a 45° line and that the true adjustment curve is a line at right angles to it. These assumptions, better than any others which have been tried, tend to reduce the scores of an individual tested under varying conditions to a constant value. When ability is known to be constant, variations in the supposedly constant value would become measures of effort. Experimental validation of these assumptions is thus possible as soon as objective measures of effort are available.

In the table, the corrected value is the arithmetical mean of rate and quality, that is,

$$\text{Ability in handwriting} = \frac{\text{Rate} + \text{Quality}}{2}$$

The resulting score is neither rate nor quality but ability measured under comparable conditions. Such scores make possible many studies which could not otherwise be made. There are, however, certain difficulties in their use which make it probable that the ultimate form of correction formula will not be so simple; that allowances for differences in heredity, maturity, and training must also be made before a true understand-

FIGURE 11. DEVELOPMENT CURVE OF ONE'S INDIVIDUAL'S ABILITY IN HANDWRITING BASED UPON CORRECTED SCORES




Note: The scores of Figure 10 were corrected by averaging rate and quality, and were accurately placed with reference to the lower time scale. Just above the time scale is shown the grade scale. In January and June, 1924, the series of scores obtained are represented by dots. The arrows show the maximum range of variation caused by changes in effort. The dotted line probably represents the true development curve.

ing of an individual's ability can be had. Discussion of these points can have no place in this paper.

As an illustration of the use of comparable scores, Figure 11 is presented. It shows that the individual's ability probably developed rapidly in grades II and III but did not change much during the next four semesters. The low scores at the beginning of certain semesters and the higher scores at the ends are probably due to changes in effort. A new teacher ordinarily inspires little effort at the beginning of the term, but by the final test at the end of the semester a child is likely to be more responsive. On this basis, however, the teacher in grade VI-A must be judged to have made greater appeal in giving tests to children than the teachers of the other grades. The arrows show the fluctuations in scores caused by varying degrees of effort in the special series of tests that were given. The highest scores in the last series were secured by giving the children a dime each time they increased their previous scores in *both* rate and accuracy. Out of a class of 34 children eight were successful in all three trials, earning 30 cents apiece, 17 children earned 20 cents, and there was no child who did not with effort succeed in earning at least one dime.

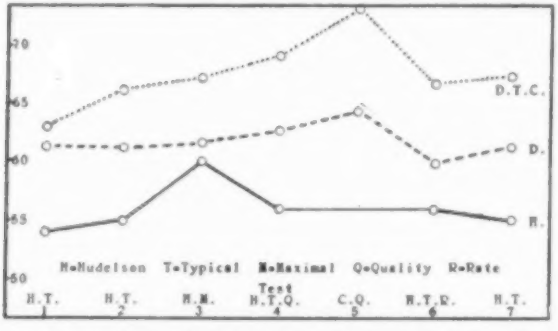
There is some evidence to show that growth curves for ability frequently have long plateaus, but ordinarily these plateaus in school learning curves are completely obscured by the variations in score caused by effort. Undoubtedly the fifth-grade teachers of this child felt that they had done well by him; the final tests gave much higher results than the initial tests. How many other of our ordinary conclusions are erroneous only future investigations can reveal.

Elsewhere it has been shown that similar adjustment of rate and accuracy takes place in scores in addition when the conditions are varied; also that variations in effort in addition cause fluctuations in scores.[5] The same factors operate and in much the same manner, in every measurement of skill. For instance,

[5] **Courtis, S. A., and Thorndike, E. L. "Correction Formulae for Addition Tests."** ***Teachers College Record,*** **31:10-24, January, 1920.**

in Figures 12 and 13 are presented the results of a series of tests in composition under varying conditions. The first figure is based upon the scores for quality only, as such comparisons are frequently made. The second shows for the Detroit tests rate in relation to quality and proves that fluctuations in score

FIGURE 12. RESULTS IN TERMS OF QUALITY ONLY



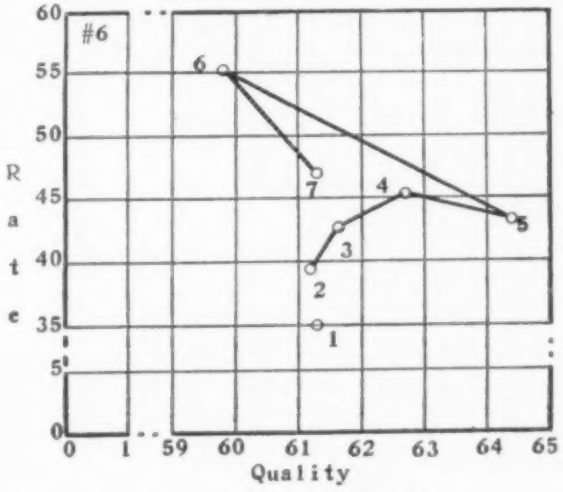

Note: An illustration of how inadequately the score in quality only represents performance in composition. D means the scores of approximately 100 Detroit children; D.T.C. the scores of students in Detroit Teachers College. Test 1 and Test 2 were on assignments rated by Hudelson as typical. Test 3 was Hudelson maximum assignment. Test 5 was a test given under conditions considered by the writer to emphasize quality (slow) while Test 6 emphasized speed (fast). Test 7 was a typical assignment given as a check test. Compare curve D with the curve in Figure 13 which is based upon exactly the same quality scores with the associated rate scores. The line 5-6 is an adjustment line corresponding to similar lines in handwriting.

occur in this field in very much the same fashion as in handwriting. For instance, the line joining the score of test 5 to test 6 is the adjustment line from "slow to fast." It is probable, therefore, that a study of variation in score under varying conditions would be helpful in all fields of measurement; also, that correction formulae are needed for every test.

The conclusion of this article seems to the writer to be self-evident. The law of the single variable applies to the interpretation of data as well as elsewhere. Inferences based on data which are not comparable are almost certain to be invalid. In other words, many of the results of past experimentation—especially correlations and comparisons of methods—where the

essential data are scores based on complexes of ability, adjustment, and effort will need to be revised and conclusions reached only after all factors but one have been rendered constant through the correction of raw scores for the disturbing elements.

FIGURE 13. DETROIT MEDIANS IN TERMS OF RATE AND QUALITY




Note: For explanation, see note under Figure 12.

# CASE STUDIES OF READING DEFICIENCIES IN JUNIOR HIGH SCHOOLS[1]

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The purpose of this discussion is to emphasize the importance of detailed case studies of junior high-school pupils who encounter serious difficulty in reading. Only two phases of the problem can be considered at this time, namely, conditions which justify such studies in the seventh, eighth, and ninth grades, and steps which may be taken in making them.

By the time pupils enter the seventh grade a majority of them have learned to interpret rapidly and intelligently selections of considerable difficulty. They have made notable progress in interpretation when reading for different purposes, and they have attained a rate of silent reading which is two or three times their rate of oral reading. If the instruction provided has been appropriate and effective, a large proportion of the pupils have acquired wholesome motives for reading, have read somewhat widely in content subjects and in the field of children's literature, and have acquired a rich fund of experience through reading. By virtue of such accomplishments seventh-grade pupils enter a period of independent application and refinement of reading and study habits. The instruction provided in most classrooms at this level presupposes a thorough mastery of fundamental reading habits. If pupils have made satisfactory progress in reading in the grades, they are reasonably well prepared for the broader and more difficult reading activities to which they are now assigned.

Unfortunately many pupils enter junior high schools who are seriously retarded in one or more phases of reading. The situation can be described in concrete terms by reference to a recent study. In May and June, 1923, tests were given to all pupils

[1] Read before the joint session of the National Society of College Teachers of Education and the Educational Research Association, Wednesday, February 27, 1924 at Chicago.

who are now enrolled in the seventh, eighth, and ninth grades of the University High School to determine their general accomplishments in reading, the specific difficulties which they encountered, and their capacity to learn. The tests used were the National Intelligence Tests, the Monroe Silent Reading Test for grades IX to XII, the Burgess Silent Reading Test, an informal test of rate of silent reading, and the Standardized Oral Reading Paragraphs. As would naturally be expected, the tests showed that a majority of the pupils in each grade had acquired mature habits in all phases of reading and were fully prepared for the independent mastery of assigned work. On the other hand, a surprisingly large number scored from one to five years behind the normal accomplishment for their grades in specific phases of reading.

As soon as the test scores were available, the pupils were ranked from one to four on the basis of their accomplishment in rate of accurate interpretation, in depth of interpretation, in rate of silent reading, and in rate and accuracy of recognition. Of 74 pupils entering the seventh grade, 24 were in the lowest quartile in one of four phases of reading; 5, in two phases; and 6, in three phases. Of the 116 pupils in the ninth grade, 30 were in the lowest quartile in one phase of reading; 19, in two phases; 7, in three phases; and 4, in four phases. The results showed that the pupils of a given grade differed widely both in the amount and character of their deficiencies. Some were very weak in all phases of reading; a much larger number encountered difficulty in only one or two of the fundamental requirements.

In order to determine whether difficulty in reading was related to success or failure in content subjects, members of the high-school faculty were asked early in November to report on certain cases. The reports which were submitted supplied convincing evidence that pupils who rank low in reading accomplishment are usually unable to do effective work in content subjects requiring independent study. Typical reports concerning two pupils follow:

R is trying very hard, but does not get along well. He thinks slowly, and is unable to complete tasks which are assigned to him. This is due

to the fact that he does not read well and cannot concentrate. He needs careful directions and much assistance.

G is a hard worker but she fails to produce satisfactory results. Her work is more or less aimless, and she fails to adopt a plan of action before attacking a problem. If her speed and comprehension in reading could be improved, the probability of success in mathematics would undoubtedly be much greater, for success in that subject depends primarily on the quick grasp of new concepts or of old ones met in new situations or in new combinations.

The various reports submitted by members of the faculty showed clearly that pupils who encounter serious difficulties in reading usually do unsatisfactory work in content subjects. We know from experience that many of these pupils soon become discouraged and not infrequently discontinue school work altogether. The needs of such pupils in junior high schools present an unusually urgent problem, because of the rigorous demands made upon them and because the type of help which they need is not usually provided.

In the further study of the pupils who were deficient in reading accomplishment, a series of case studies was undertaken to determine whether pupils who rank equally low in a given phase of reading, such as speed of silent reading or comprehension, should receive similar or different types of remedial instruction. The results showed that deficiencies in given phases of reading are frequently due to widely different causes and that a detailed study must be made of each seriously retarded case in order to secure a clear understanding of it. In support of this statement a brief summary of the findings in two cases will be presented. Attention is directed specifically to the cause of unsatisfactory progress in each case.

*Case J.*—The case of J is a good example of the lack of proper early training and experience. When he entered school at the age of six he was unable to speak the English language. The following year he moved to New York City where he attended five different schools. Returning to Chicago at the age of eight, he entered a south-side school where it was found that he could not read. He made very slow progress during that year, but was permitted to enter the IV-B class on trial the next autumn. Again he failed to make satisfactory progress, and he was sent to a private school to repeat the work of the fourth grade. At the age of ten he entered the V-B grade of the University Elementary

School. The principal and teachers found that he was discouraged, timid, and obstinate. He failed to meet responsibilities. It required a long time for him to accomplish an assigned task. In spite of these handicaps he was promoted regularly to the VI-B and VII-B grades.

Prior to entering the seventh grade, he took little or no interest in the things that other boys of his age normally did. He cared little for sports and far less for reading. During that year, however, his interest was awakened along many lines and he began to read widely. His record showed that in the VII-B grade he read a total of one hundred and two books. At first he read books which are usually enjoyed by pupils in the lower grades. Later he began to read books somewhat more difficult and more suitable to his age. A majority of the books read were in the Boy Scout Series or related to sports, athletics, adventure, history, or the experiences of detectives. At the time this study was made he was most interested in detective stories. Questioning revealed the fact that he was woefully lacking in experience. Estimates made by his teachers showed that he ranked very low in intellectual interests and was unable to read effectively selections which went outside of a narrow range of topics.

The facts secured through this study show that J had received a poor start in reading, that he had made very slow progress during the first five grades, that since that time he had advanced rapidly in ability to read, but that he still ranked low at the time of this study. The progress which he made was accompanied by awakened interests which resulted in a large amount of reading. In the light of all the facts secured, the conclusion was reached that further progress depended more largely on effective stimulation of interest in reading about an increasingly wide range of topics than on systematic drills in specific phases of reading. His work during the first half of the current year indicated that an accurate diagnosis had been made.

*Case M.*—M has never developed independence in or a feeling of responsibility for her work. From early childhood she has been given everything she asked or cried for. She has been bribed rather than required to do things. She has been excused from home responsibilities and numerous steps have been taken to make life as easy for her as possible. Her elementary-school record reveals the fact that she manifested little or no independence or initiative in her school work and that she depended on her parents, associates, or a tutor for the preparation of much of her assigned work.

Owing to changes in her home life which need not be related here, she developed rapidly last year. She now has a wider range of interests than formerly but is seriously handicapped by the fact that she failed to master fundamental reading habits in the grades. As a result she is sadly in need of systematic instruction in speed and accuracy of recognition, in the interpretation of what she reads, and in speed of silent reading. In order to secure her interest and cooperation, it will

be necessary to provide reading exercises related directly to one or another of the interests which are challenging her attention at this time.

A comparison of the histories of these two cases shows clearly that deficiencies in given phases of reading may be due to entirely different causes and may demand equally different treatment. The study of other junior high-school cases has revealed numerous causes of slow progress such as low native intelligence, inadequate language habits, little or no interest in reading, a careless, indifferent attitude toward school work, ineffective attention and application, poor home environment, distracting social influences, inadequate parental guidance, disturbed physical or emotional condition, and inaccurate classification. Since remedial instruction must be adapted to the cause as well as to the specific difficulty encountered, provision must be made for case studies in junior high schools where the causes of slow progress are very complex on the one hand and more or less remote on the other. There is a second urgent demand at this time for such studies. Only a relatively small number of studies have been made and reported thus far. A clear understanding of the significance of various causal factors and of appropriate remedial steps in each case can be secured only through an analysis and comparison of the results of a large number of accurate, detailed studies of individual cases.

The classroom study, as contrasted with the laboratory study, of a pupil who encounters unusual difficulty in reading involves a number of steps. The first may be termed the preliminary diagnosis through the use of standardized tests. If the tests are wisely selected they will reveal symptoms of strength or weakness in specific phases of reading such as depth of interpretation, accuracy of interpreting simple passages, rate of interpreting simple or difficult passages accurately, rate of silent reading, and accuracy of recognition. Best results are secured when standardized tests are given systematically two or three times a year as a part of the routine of administration or teaching. Special provision should then be made for the detailed study of every pupil whose accomplishment in reading is unsatisfactory.

The second step is the deliberate analysis of a case through the use of informal tests and by records of errors and difficulties encountered in class work. This step is necessary for at least three reasons: (1) the standardized tests which are now available do not measure accomplishment in all phases of reading; (2) the most helpful records are those which are secured when a pupil is working under normal conditions; and (3) a continuous series of records, such as can be secured only through informal tests given day after day, is essential to a clear understanding of a case. Experience with more than one hundred remedial cases has shown clearly that the specific nature of a pupil's difficulties can be determined in a large majority of cases through the use of no more technical devices than informal tests of reading accomplishment.

The type of informal tests used in a given case depends on suggestions secured in the preliminary diagnosis. For example, if a pupil encounters difficulty in comprehension, study tests may be given such as those recommended for use in junior high schools by Charles E. Finch in the *School Review*, March, 1920.[2] If he encounters difficulty in recognition, informal tests, such as those suggested for use in connection with the Oral Reading Check Tests,[3] may be used to advantage. Not infrequently it is necessary to organize tests which do not specifically measure reading accomplishment, but which are directed toward such matters as skill in the use of the dictionary or ability to analyze words for meaning or pronunciation. As a case study progresses, suggestions will be secured from day to day concerning additional tests which should be given. Because the organization of appropriate tests for use in a diagnosis requires an intimate knowledge of the attitudes, habits, and skills involved in effective reading, case studies should be made primarily by teachers who have had wide experience in teaching reading.

While the teacher is making a detailed factual study of a case, the administrative officers should aid her in securing in-

[2] "Junior High-School Study Tests." 28:220-226, January, 1920.

[3] These tests are published by the Public School Publishing Company, Bloomington, Illinois.

formation from other sources. For example, a careful report should be made by other teachers of the present reading status of a pupil in each content subject. The following questions have proved helpful in securing illuminating information. In what phases of reading, if any, does Pupil A excel? What are his characteristic weaknesses as revealed in the subject you teach? What in your judgment are the probable causes of his reading difficulties? What are the amount and character of his outside or supplementary reading? What special interests has the pupil which may be used in overcoming reading difficulties? This report should be supplemented by a bi-weekly report from each teacher concerning the progress of the pupil and by records of trait analyses, if such record blanks are used in the school. Furthermore, the principal's office should supply the special teacher with the pupil's attendance record, his personal health history, the results of his medical examination, a statement of the study habits exhibited in classroom, study hall, and library, and any other information which may be on file, such as the results of mental tests or the Downey Individual Will-Temperament Test. As a rule, there is available in each school much information concerning individual cases which is rarely utilized because steps are not taken to bring it together and interpret it.

Information concerning the present status of a pupil should be supplemented by facts concerning his home condition and environment, his temperament and recreational activities, his school history, and his reading history. As a guide in this connection a mimeographed folder of questions is frequently used. Some of the questions and items of information which have proved most valuable follow:

1. With regard to home conditions
   a. Location and kind of home
   b. Language most frequently spoken
   c. Educational status of parents
      Special ability or disability in reading
      Attitude toward school
      Interest in reading
   d. Books and periodicals in home of interest to child
   e. Amount and character of child's employment
   f. Character of control exerted by the home

2. With regard to recreational activities
   a. List of favorite play activities
   b. Age and character of associates
   c. Amount and character of leisure reading
3. With regard to school history
   a. History of school progress including
      Number and kind of schools attended
      Amount of time spent in each grade
      Explanation for acceleration or retardation
   b. Record of school marks for past year
      Extent to which slow progress in any subject was due to difficulties in reading
   c. Attitude of pupil to teacher and to school
4. With regard to reading history
   a. Amount and character of pre-school training in reading
   b. Methods employed in first grade
   c. Character of progress in the second and third grades
   d. Phases of reading emphasized in fourth, fifth, and sixth grades
   e. Amount and character of remedial work, if any

In order to emphasize the importance of detailed information concerning the previous record of a pupil, brief reference is made to two additional cases. The explanation for the difficulties of one junior high-school pupil lay in the fact that he entered the first grade late, was soon promoted to the third grade on account of his age, and consequently failed to secure training in those habits which underlie speed and accuracy of reading. As a result he was unable to read fluently, accurately, or effectively. When training in the fundamental habits of reading was provided, he improved rapidly and was soon able to compete successfully with other members of his class.

In a second case it was found that the pupil had made very satisfactory progress in the first three grades. Her record in reading was very good in the fourth, fifth, and sixth grades, but was quite unsatisfactory in the content subjects which required independent study. An examination of the selections which had been assigned to her in her reading classes showed that they were highly imaginative in type and that very little factual or informational material had been included. When tests based on informational and imaginative selections were given, the results showed very poor accomplishment in the one and very satis-

factory accomplishment in the other. These results suggested the primary cause of her weakness. When carefully graded exercises were provided in the interpretation of factual material, she improved. In the course of two months she was able to carry her regular class work successfully.

The facts which have been presented show that pupils enter junior high schools who encounter serious difficulties in reading and who make unsatisfactory progress because of their handicaps. Experience teaches that in a large number of cases disabilities which appear to be similar are due to widely different causes and hence demand different treatment. There are thousands of boys and girls in junior high schools each year who make little or no progress because of inaccuracies and handicaps in reading which could be removed. At the present time little or no administrative machinery has been provided for locating these cases early, for securing, assembling, and interpreting the information which is essential to a clear understanding of their cases, and for providing appropriate instruction for them. Society recognizes clearly that children differ widely in native endowment and learning capacity; it insists, however, that schools utilize every possible means to provide the most effective instruction for each child. If junior high schools are to meet this obligation successfully, administrators and teachers alike must assume responsibility for detailed studies of reading deficiencies.

# A STUDY OF THE SPEED OF UPPER GRADE READING

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In reading the literature dealing with the psychology of reading, one gets the impression that speed in reading depends upon the physiological factors of eye-span and eye-fixation. This may be true for children who are still learning to read; but may it not be true that, in reading to learn, the psychological factor—the comprehension span—is the thing that conditions the speed of reading? If the latter is true, then the purpose for which reading is done should determine the speed of the reading.

The experiment reported below was undertaken with a view of finding out whether or not identical material would be read at different rates of speed when read for different purposes. The study was made under the direction of Dr. F. L. Clapp, professor of Education at the University of Wisconsin. The tests were given in grade seven of the public schools of Watertown, Wisconsin. The cordial cooperation of Superintendent Berto and his teachers and principals made the testing possible.

On February 2, 1922, a preliminary test was given to 84 sixth- and seventh-grade pupils. The sixth-grade pupils—only a few in number—were included because they belonged in the room which was being tested. The majority of the pupils, therefore, were seventh-graders. The test was based upon Test II, Form 3, of Monroe's Standardized Silent Reading Test, Revised, but the questions asked on each paragraph were placed above the paragraph instead of below it. For example, Paragraph 2, as used in this test, was arranged as follows:

> Draw a line under the word which best describes the children
>
> merry cross weary playful studious
>
> It had been a long, dreary, rainy day and the children were gathered around the fire in the tiresome hour before dinner. They were tired of games and books, and not even talking much.

Monroe's standard procedure was observed in this and in all of the other tests used. Exactly four minutes were allowed the children for their reading. The rate score as reported is the total number of words read divided by four, or the number of words read per minute.

When the preliminary tests had been scored, the papers were ranked. The highest score was given rank 1, the next highest rank 2, and so on. Only when more than one paper had the same rate score, were the comprehension scores considered in determining the rank. On the basis of rank, each child was given a number, which he kept throughout the experiment.

Since there were three different tests to be given, the pupils were divided into three groups of as nearly equal reading abilities as possible. Pupil Number 1 was placed in the first group, pupil Number 2 in the second group, and pupil Number 3 in the third group; pupil Number 4 in the third group, pupil Number 5 in the second group, and pupil Number 6 in the first group, etc. Table I shows the individual and average rate scores for the three groups.

From Table I it will be seen that the reading abilities of the three groups were as nearly equal as one could make them on the basis of only one test. Each of the three groups was given a different test on each of the three later occasions. The results of these tests, compared with the scores made by the same pupils on the preliminary test, are reported in this study.

Tests A, B, and C were very similar to the preliminary test. They were based on Test II, Form 2, of Monroe's Standardized Silent Reading Test, Revised. The questions were placed ahead of each paragraph so that the child might know his problem before he began to read. The eighteen paragraphs which constituted each of the three tests were identical; but the questions were different. The questions on Test A were such that the word which was the correct answer would be found in the paragraph read. The answers to the questions in Test B could be found directly from the thought of the paragraph; but the answers to the questions in Test C could only be found after the

reader had formed the mental picture suggested by the paragraph and had combined with it some additional attribute or attributes. An illustration from the tests will make these differences clear. The paragraph below is the second one of each of the three tests.

> It took us an hour to transport our stores to the spot selected for the encampment. Having pitched our tent, using the five oars to support the canvas, we got out our lines, and went down to fish.

TABLE I. SHOWING THE GROUPING OF PUPILS ON THE BASIS OF THE PRELIMINARY TEST

| First Group | | Second Group | | Third Group | |
|---|---|---|---|---|---|
| Pupil No. | Score | Pupil No. | Score | Pupil No. | Score |
| 1... | 208.50 | 2... | 208.50 | 3... | 208.50 |
| 6... | 208.50 | 5... | 208.50 | 4... | 208.50 |
| 7... | 192.75 | 8... | 187.25 | 9... | 184.25 |
| 12... | 181.00 | 11... | 182.00 | 10... | 183.25 |
| 13... | 178.75 | 14... | 171.25 | 15... | 168.00 |
| 18... | 162.25 | 17... | 164.00 | 16... | 166.75 |
| 19... | 161.25 | 20... | 159.00 | 21... | 159.00 |
| 24... | 152.75 | 23... | 154.75 | 22... | 157.00 |
| 25... | 151.75 | 26... | 147.50 | 27... | 147.50 |
| 30... | 141.25 | 29... | 142.00 | 28... | 143.75 |
| 31... | 141.00 | 32... | 138.25 | 33... | 135.25 |
| 36... | 135.25 | 35... | 135.25 | 34... | 135.25 |
| 37... | 135.25 | 38... | 133.00 | 39... | 132.75 |
| 42... | 130.75 | 41... | 132.25 | 40... | 132.75 |
| 43... | 130.75 | 44... | 125.25 | 45... | 122.00 |
| 48... | 122.00 | 47... | 122.00 | 46... | 122.00 |
| 49... | 122.00 | 50... | 122.00 | 51... | 122.00 |
| 54... | 119.25 | 53... | 121.25 | 52... | 122.00 |
| 55... | 119.00 | 56... | 118.25 | 57... | 117.25 |
| 60... | 110.25 | 59... | 110.50 | 58... | 114.50 |
| 61... | 110.25 | 62... | 110.25 | 63... | 110.25 |
| 66... | 103.75 | 65... | 104.50 | 64... | 106.25 |
| 67... | 103.75 | 68... | 101.25 | 69... | 100.75 |
| 72... | 97.25 | 71... | 97.50 | 70... | 100.00 |
| 73... | 97.25 | 74... | 97.25 | 75... | 96.75 |
| 78... | 87.25 | 77... | 87.50 | 76... | 91.50 |
| 79... | 86.25 | 80... | 84.75 | 81... | 82.25 |
| 84... | 76.25 | 83... | 78.00 | 82... | 82.25 |
| Ave. | 134.51 | Ave. | 133.71 | Ave. | 134.01 |

In Test A was asked the question:

> Draw a line under the word which tells what supported the canvas.
>
> ropes trees poles oars straps branches

Here the correct answer is "oars" and it is found directly in the paragraph. In Test B the following question was asked:

> Draw a line under the word which tells what these people were doing.
>
> studying camping swimming hunting working

Here the correct answer is "camping." It is not found in the paragraph but is obtained directly from the thought of the paragraph. In Test C the following question was asked:

> Draw a line under the word which best tells what they saw from their tent.
>
> farm prairie city lake

The correct answer here is "lake." It can be given only after some attributes not directly contributed to the mental picture by the paragraph have been added. Test A calls for the kind of reading we do when we are reading for pleasure. Test B suggests the ordinary news kind of reading. Test C requires the type of reading done in connection with study.

On February 27, Test A was given to the first group; Test B, to the second group; and Test C, to the third group; as divided on the basis of the preliminary test. Because of absence only sixty scores could be used. If pupil Number 1 was absent, the scores made by pupils Number 2 and Number 3 had to be discarded, because one was balanced against the other in the formation of the three groups of equal reading ability. In the same way, if pupil Number 11 was absent the scores of pupils Number 10 and Number 12 had to be discarded.

Table II gives the results of the tests given on February 27. The average reading rate made on these tests is compared with the average made on the preliminary test by the same groups of pupils.

Table II shows that Group I averaged 168.1 words per minute on Test A as against 130.5 words per minute on the preliminary test, an increase of 28.8 percent. The increases for the pupils who took Tests B and C were 11.7 percent and 2.9 percent, respectively. If we compare the reading done on Test A with that done on Test C we find that there was a difference of about 34 words per minute in the rates at which the material was read.

The same tests were given a second time on March 31, the first group taking Test B, the second group Test C, and the third group Test A. Table III shows the results of these tests.

TABLE II. TESTS A, B, AND C COMPARED WITH THE PRELIMINARY TEST

GROUP I TAKING TEST A; GROUP II, TEST B; AND GROUP III, TEST C

| | Group I (Test A) | Group II (Test B) | Group III (Test C) |
|---|---|---|---|
| Tests A, B, and C | | | |
| Average | 168.1 | 145.4 | 134.6 |
| Upper Quartile | 205.9 | 171.8 | 153.9 |
| Median | 157.9 | 145.8 | 131.3 |
| Lower Quartile | 139.3 | 116.1 | 119.3 |
| Preliminary Test | | | |
| Average | 130.5 | 130.2 | 130.8 |
| Upper Quartile | 157.0 | 156.9 | 158.0 |
| Median | 122.0 | 122.0 | 122.0 |
| Lower Quartile | 100.5 | 99.4 | 100.4 |
| Percent increase over preliminary test (on averages) | 28.8 | 11.7 | 2.9 |

TABLE III. TESTS A, B, AND C COMPARED WITH THE PRELIMINARY TEST

GROUP III TAKING TEST A; GROUP I, TEST B; AND GROUP II, TEST C

| | Group III (Test A) | Group I (Test B) | Group II (Test C) |
|---|---|---|---|
| Tests A, B, and C | | | |
| Average | 174.0 | 171.7 | 169.2 |
| Upper Quartile | 229.4 | 196.8 | 203.1 |
| Median | 158.8 | 167.6 | 161.5 |
| Lower Quartile | 134.8 | 159.5 | 134.2 |
| Preliminary Test | | | |
| Average | 138.2 | 138.9 | 137.7 |
| Upper Quartile | 158.0 | 157.5 | 156.9 |
| Median | 135.3 | 138.1 | 136.8 |
| Lower Quartile | 122.0 | 120.6 | 121.6 |
| Percent increase over preliminary test | 25.9 | 23.7 | 22.9 |

In general, the results shown in Table III are similar to those shown of Table II. The material in Test A was read at a greater speed than the material in the other two tests, although the differences in the average rate are not as great as the differences shown in Table II. This was of course the second time these pupils had read this material, and the question arises whether or not familiarity with the material carries over to a greater extent in one kind of reading than in another. From these data it would seem that the harder the reading, from the standpoint of the purpose for which it is done, the greater the advantage to be gotten from previous reading.

The last testing was on May 15 which completed the round so that each child, if he were present, had taken the preliminary test and Tests A, B, and C. Table IV gives the results of the testing on May 15. At this time Group II took Test A; Group III, Test B; and Group I, Test C.

TABLE IV. TESTS A, B, AND C COMPARED WITH THE PRELIMINARY TEST

GROUP II TAKING TEST A; GROUP III, TEST B; AND GROUP I, TEST C

| | Group II (Test A) | Group III (Test B) | Group I (Test C) |
|---|---|---|---|
| Tests A, B, and C | | | |
| Average | 183.7 | 167.0 | 172.1 |
| Upper Quartile | 213.5 | 197.0 | 187.0 |
| Median | 187.1 | 159.5 | 176.9 |
| Lower Quartile | 159.5 | 132.8 | 155.0 |
| Preliminary Test | | | |
| Average | 127.4 | 128.0 | 127.6 |
| Upper Quartile | 142.0 | 143.8 | 141.3 |
| Median | 122.0 | 122.0 | 122.0 |
| Lower Quartile | 104.5 | 106.3 | 103.8 |
| Percent increase over preliminary test | 44.1 | 30.4 | 34.9 |

It will be seen from Table IV that, as before, the material in Test A was read at the greatest speed. On this occasion, however, Test C was read at a greater speed than Test B, although the difference was not great.

Inspection of the individual scores—not given in all cases in this report—shows that there is a rather marked tendency for those who did well on the preliminary test to do well on Tests A, B, and C and vice versa. In fact, a rough measure of correlation (the Spearman Footrule) yields coefficients in the vicinity of +0.50. Fifty-nine pupils were present on all occasions when tests were given. By combining the results of the three testing periods we get a larger group, and more significant results. Table V gives the comparative data. The average rate for the 59 pupils on the preliminary test was 134.14. This number is used in computing the percent of increase.

TABLE V. SCORES MADE BY ENTIRE GROUP ON TESTS A, B, AND C WITH PERCENT OF INCREASE OVER THE PRELIMINARY TEST

| | Test A | Test B | Test C |
|---|---|---|---|
| Average | 181.8 | 166.8 | 159.9 |
| Increase (percent) | 35.5 | 23.6 | 19.2 |
| Upper Quartile | 223.5 | 196.8 | 183.0 |
| Median | 183.0 | 164.0 | 159.5 |
| Lower Quartile | 145.8 | 137.8 | 130.0 |

Table V shows that the material in Test A was read at the average rate of 181.8 words per minute. The same material, when given in Test B, was read at the rate of 166.8 words per minute and in Test C, at 159.9 words per minute. Except for the questions the material in the three tests was identical. It would seem, then, that the purpose for which one reads influences his speed. Each reader has, therefore, a number of speeds in reading and to say that a pupil's reading rate is so many words per minute does not mean much unless one also tells what kind of reading is meant.

If the results shown by this experiment are correct, they suggest a number of practical educational problems. In the building of tests designed to measure speed of reading, one must decide the type of reading one wishes to measure and then measure that type only. Assignments should vary in length with the type of reading asked for. Another problem is the development of technique for the teaching of the different types of reading.

## Conclusions

Because of the small number of subjects included, these experiments should not be considered conclusive. The following points, however, are suggested:

1. The experiments indicate that speed in reading is dependent in part upon the purpose for which the reading is done.
2. A good reader in one type of reading is also likely to be a good reader in other types of reading.
3. Tests to measure speed in reading should be designed to measure a particular type of reading. One cannot mix reading material of different types in the same test and get any worthwhile results.
4. Different types of reading should be recognized in the teaching procedure.

# A GENERAL SURVEY OF THE CURRICULUM SITUATION[1]

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At the Cleveland meeting of the Department of Superintendence there was authorized the appointment of a commission for the purpose of bringing together the elements for the construction of a suitable curriculum for the boys and girls of American public schools.

It was decided to make the study of the curriculum a two-year problem. The 1924 yearbook committee of the Department was to conduct the preliminary work of the first year, while the Commission on the Curriculum, which has just been appointed, was to direct the second year's work.

In carrying out its part of this program, the yearbook committee last summer at San Francisco drafted the outline of the Yearbook of the Department of Superintendence known as *The Elementary School Curriculum*. Part III of this outline was headed "A General Analysis of Present Elementary-School Curriculum Practice."

The Division of Research of the National Education Association was made responsible for this section of the yearbook. As a basis for the analysis of the elementary-school curriculum situation the following material was assembled: (1) eighty-five courses of study published since 1920, representing all sections of the country and varying types of school systems; (2) a number of recent standard texts on the curriculum; and (3) a hundred or more communications from curriculum specialists, superintendents of schools, and other school people giving their reactions to different phases of the existing curriculum situation. With these materials we launched forth—not without serious misgivings to be sure—into an analysis of the elementary-school cur-

[1] Read before the joint session of the National Society of the College Teachers of Education and the Educational Research Association, Wednesday, February 27, 1924, at Chicago.

riculum situation in the United States. The results of the survey are found in full in Part III of the second yearbook. Some of the outstanding findings may be briefly mentioned.

There is little uniformity in practice in the United States so far as the elementary-school curriculum is concerned. Each state and, in most sections, each local district is a law unto itself. Some localities begin arithmetic in the low first grade, while others do not start arithmetical instruction until the third grade is reached. Instruction in silent reading in some courses is required in all grades from the low first to the high eighth. Other courses require practice in silent reading from the second to the fifth grade only, while still others begin it with the fifth grade and continue it through the eighth. In the eighty-five courses of study, twenty-eight different combinations of grades were set up as the proper ones in which to teach silent reading.

Spelling is begun by different cities in each grade from the first to the third. Some cities allot eight percent of the time of the first six grades to spelling, some allot but two percent. I do not say that strict uniformity in these matters is desirable, but it can be said that a complete lack of uniformity does exist. Each author of a curriculum sets up his own standards as to what should be taught, when it should be taught, and how long it should be taught. The bases of these decisions are seldom indicated. They appear to have been arrived at independently, without reference to the practice in other places or to any objective criteria.

The second finding in our analysis of the curriculum situation concerns the objectives of education. So far as many courses of study disclose, education has no objectives. Others declare some high sounding aims in the Preface and then forget all about them and get down to the real business of telling the teacher to teach from "thar to thar"—let the habits, skills, and attitudes take care of themselves! It is the exceptional course that sets up definite educational objectives and then consistently follows these through in the selection and assignment of subject content.

This is a rapidly changing age. Few would advocate a static curriculum. Yet, has the time not come for a general agreement on at least some of the major objectives of public education? Is it not time to take down from the library shelves, devoted to educational philosophy, some of the major objectives and to put them into the courses of study? Should not every certificated teacher know as he knows his name and have ever before him as he plans his daily work certain fundamental educational aims, no matter whether his certificate is granted by Maine or California? Would not the parent feel better satisfied if he knew his child was attending a school which had behind all of its activities certain clearly defined and generally accepted educational objectives?

The third finding has to do with "fads and frills." Recent courses of study do not support the fears of our contemporaries who still live in the educational atmosphere of a generation ago that the school is neglecting the fundamentals. Slightly more than fifty percent of school time is at present devoted to the three R's, namely, language, reading, spelling, writing, and arithmetic. History, civics, geography, and science account for 15 percent of school time. One-third of the time that each child spends under the school's jurisdiction is given to hygiene and physical training, music, fine and industrial arts, recesses, and special exercises. Perhaps there are those who would criticize the school for spending as much as one-third of its time on such subjects. Such critics fail to recognize the importance of training for health and for the wise use of leisure time. It is in these directions that America is making its greatest failure today. Teach America how to spend its leisure time wisely and you will have removed most of the forces that threaten the stability of her civilization.

The fourth finding of the study is that there exists no adequate clearing house through which the best thought and practice on the curriculum may be readily pooled. Individual superintendents or local committees on the course of study too often find it necessary to depend almost wholly upon their own re-

sources in determining curricula. It was only after several months of effort with all the facilities and all the prestige of the National Education Association and its great Department of Superintendence to aid it, that it was possible to get together materials necessary for even a rough survey of existing thought and practice affecting the curriculum. The facilities of the ordinary school-administrative unit today are insufficient to assemble the existing material that should be at hand preliminary to any effort in determining the curricula for the children of a school system.

School people work more in the dark today, have less adequate facilities for pooling such knowledge as exists, than do any other important group of workers. This situation is nowhere better illustrated than in the situation in which the ordinary course of study committee works.

There is great need for some central clearing house, such as a Federal Department of Education, which will have for one of its important functions the collection, for distribution on request, of compilations of the best current thought on educational aims and objectives and scientific methods for realizing these desired outcomes in terms of habits, skills, and attitudes. Only through such a clearing house may duplication and waste of effort be prevented in the rapid development of the public school curriculum, which is bound to be a part of the educational history of the next few decades.

Millions are spent for research to guide the efforts of farmers, business men, and other groups. Great advances in all phases of life are now being made on the bases of research and exact information. It is time for similar assistance to be furnished the thousands of small local school units struggling to bring a nineteenth-century curriculum into harmony with twentieth-century life. Dollars can be put into no more productive effort than that devoted to the improvement of the efficiency with which we instruct each new generation.

On the basis of these findings—the lack of any reasonable uniformity in curricular practice, the absence of definite educa-

tional aims, the meager time given to the newer types of subject matter, and the absence of an adequate clearing house for the pooling of expert opinion on curricular matters—one might draw pessimistic conclusions. Such conclusions, however, are not justified.

There are many encouraging signs. School people have already made rapid advances in the development of curricula. The work that has been done or is being done in such cities as Los Angeles, Berkeley, Denver, and Baltimore—to mention but a few of a number of splendid examples—holds great promise for the future. The educational objectives in these cities are not obscure. The school people in these cities are not working in the dark. These pieces of work hold great promises for the future. They reveal the American school rising to meet the problems that the increasing complexity of modern civilization is placing upon it. They show that, given the opportunity, school people can bring order out of chaos, and that they can develop curricula that promise sound training to the nation's future citizenry.

# Editorials

## RECORD MAKING IN THE SCHOOLS

Educational writers have repeatedly pointed out that the school would better serve its purpose and that the teacher would be a better teacher if more careful records of the transactions were made, kept, and used. These writers make a good case. They point to the lost motion in the classroom through ignorance of ascertaining facts about children, to the misunderstandings that arise because the decisions of school officers are not promptly and accurately recorded, to the snap judgment of administrators because permanent data are not at hand, and to the superior control of educational forces which fullness of information makes possible.

This idea is by no means new. It is the idea for which Horace Mann argued in 1838 in his first report to the Massachusetts Board of Education when he proposed that a state law be passed, requiring the keeping of a teacher's register. "While the State," he says, "in its military functions establishes a separate department, fills the statute-books with pages of minute regulations and formidable penalties, and commissions various grades of officers, so that the fact of every missing gunflint and priming wire may be detected, transmitted, and recorded among its archives, it provides no means of ascertaining how many of its children are deserters from what should be the nurseries of intelligence and morality." Yet in the days of Horace Mann and for many years thereafter record-making was a simple affair. The difference between the schools that kept no records and the schools that kept elaborate records appears merely to have depended upon whether or not the teacher kept a "catalogue" or register.

Yet although from our present point of view the teacher's register is not only a very simple form of record-making but is also accepted as a matter of course, it was, in the early New England days, by no means accepted without challenge. After the Massachusetts Board, adopting the recommendation of its secretary, had secured the passage of a state law requiring this modicum of child accounting, a bill was introduced with the support of a majority of the educational committee to abolish the State Board of Education; and the lately adopted register was apparently used by the opponents of the Board as a basis of their opposition. In the majority report of the legislative committee are words which have a familiar ring. "The rules and regulations of the school board have proven very embarrassing and have engrossed much of the time and attention of the teachers which might better have been bestowed upon the instruction of their pupils, than in making out minute and complicated registers of statistics." The fact that the minority report of the education committee was adopted by the legislature, thus saving both the Board of Education and the school register, is scarcely of as much interest as the extent and seriousness of the opposition which the introduction of so fundamental a type of record as the school register developed.

We hear much today about the time that teachers, principals, and other school officers are required to spend in record-making. It is certain that if no more were now required than was required in the middle of the nineteenth century, there would be little ground for objection—at least for a time. Yet we cannot be sure that the objection even now is valid. Like the cry of high taxes, it is too much the reflection of a state of mind rather than of a real condition requiring remedy. We do not say that taxes are not high, nor do we say that there is not too much record-making in the schools. What we do say is that the clamor about taxes and record-making raises no presumption of the kind which the clamor is designed to create.

Moreover, it is by no means certain that if the teachers and their superiors in office had fewer records to make they would

devote any more attention to teaching and supervision. It is like arguing for a six-hour day in the trades and industries on the ground that the worker will thus have more time for cultural pursuits. It is true that he will have more time for such pursuits, but it is also distressingly true that he often uses the time for ignoble purposes. Instead of getting culture he gets drunk. In the case of teachers who don't want to keep their records straight, who don't want to attend the Parent-Teacher Association, and who despise supervision, all on the ground that their job is teaching and that these things interfere with it, we always have the suspicion that if the grounds of their objection were removed they would be unlikely to utilize the energy thus released in doing a better type of teaching.

Yet it is certain that some records are better than others; and we have lately had occasion to examine some which we thought were not only trivial, but actually harmful; records which were so devoid not only of expertness in their construction but of common sense in their implication that we have reverted with more sympathy than before to the complaints of those who had to make them out.

In these records, for example, there are frequent requirements as to the age of pupils—age at entrance, age as of September 1, age at last birthday, age at nearest birthday. Since the transactions of the school with reference to a child are almost invariably dated, the age item can be taken care of once for all by recording the date of birth. Moreover, we may remark parenthetically that there is a high frequency of error on the part of teachers—and of other people as well—whenever one date is subtracted from another.

Among the largest cities of the country a score of the forms we have examined called for so inconsequential an item to be recorded with reference to each child as the number of the child's birth, namely, whether he was the first child born in the family, or the second child, etc. Almost as many cities inquire with minute particularity concerning the circumstances attendant upon

the birth of the child, circumstances which, in our judgment, it is none of the business of the school to know. Not less inquisitorial are the data frequently called for regarding the parents, such as "age of parents," "dates of parents' birth," "wages of parents," "intelligence of parents," "name of mother before marriage." Consider the following items concerning other members of the pupil's family: "personality of other children in family enrolled in school," "number of sisters dead," "number of brothers dead," "attitude towards law of mother and father," "attitude towards America of mother and father." Here is a gem, not only for the fatuous character of the information which it seeks to obtain but for the utter impossibility of answering it in the majority of cases, "Are your brothers or sisters older or younger than yourself?"

Many items appear on the record forms of our most progressive cities which although they may not have the disagreeable connotations of some of those we have just mentioned are nevertheless too trivial and too lacking in value to be worth the cost of keeping. As to the "school previously attended," it is generally and rightly regarded as sufficient to know its name, together with the grade in which the child was when he left and the date of his leaving. These items, however, occur: "room in former school," "number of schools attended during this year," "name of sixth-grade teacher," "name of eighth-grade teacher," "location of school." It appears too that in some cities children have attached to them such an array of numbers that apparently the only way to keep them straight is to record them on some kind of a form. In addition to "section number" and "locker number," we have "medical exam. number," "deposit slip number," "bank-book number," and the number of the "spot" on the gym floor to which the pupil is assigned.

There appears to be no type of work related to the school which does not lend itself to the possibility of cumbersome and exacting record-making. One would think that athletics would at least be free from this burden. Some cities, however, require a record to be kept, not only of the participation of the

pupil in baseball, basketball, football, tennis, and track, but also as to his proficiency in the "back-jack dive" and the "front neck strangle break." In regard to particular sports, information on authorized forms is required as to the number of hits, runs, errors, etc., in baseball, as to the free throws and number of baskets in basketball, and similar details regarding football. Moreover these data must be duly attested by the "signature of coaches." Again, the medical examination is enormously productive of details from "scoliosis" to "size of shoes." In fact the records for the medical examination held something like four hundred different items which in one locality or other are regarded as of sufficient importance to print as captions on their authorized forms. It is not that we object to the recording of "scoliosis"—although we do think the size of a child's feet is inconsequential—but rather that many of the rubrics, especially those used in recording defects, may be dispensed with by the use of a general term under which the specific fact may be written in the relatively rare instances with which most of these defects are found.

Thus record-making may become an end in itself. We have collected upwards of fifteen hundred items found in but a single type of record forms, namely, those which pertain directly to the individual child, such as the school register, the pupil's permanent record card, and the office record card. We have not included the vast array of report forms summarized from the subordinate records, nor the administrative forms used in connection with transfer, attendance, and employment, nor the census cards, nor the many forms having to do with teachers, supplies, and the operations of the central office.

In the presence of these details we wonder whether those who object to this sort of thing may not be right. It is true that the right kind of records used in the right way—for no records have any value unless they are used—will vitalize and make meaningful the work of the school, but like any other good thing they may be carried too far and the evidence we have lately examined leads us to believe that they are being carried too far in some quarters.

It is a truism to say that we need uniformity in our pupil accounting. This has been recognized in a large way ever since the founding of the National Education Association. Again and again, from 1857 when this organization—then known as the National Teachers' Association—was organized down to the present time, speeches have been made and committees appointed in behalf of this idea. It is surprising that we have proceeded no further in reaching this goal than appears to be the case. The fact, however, is that the job is not one for speech-makers to tackle nor for committees of busy men to handle. It requires close, patient, and laborious study. The best prospect of success seems to us to lie in the efforts of graduate schools and bureaus of research. A great deal of preliminary grubbing is essential. This has already been done by several people, although thus far no one has risen above the level of grubbing to the point where he could command respect for his authority and assent to his conclusions. Real progress, however, is being made. The overloaded condition of the record forms in many schools is forcing attention to this question. When the matter is settled or placed in the way of settlement, we predict that it will be along simple lines. The usefulness of every item now called for will be challenged. Moreover, not all useful items will be chosen. Like subject matter in the curriculum, these items may almost without exception have some usefulness; but are they worth the time which thousands of people will spend upon them? It is, after all, a case of relative values; and high indeed must be the value of a record item before it can be admitted among the limited number which we shall set-up among the minimum essentials of child accounting.

B. R. B.

# Reviews and Abstracts

McNair, George Hastings. *Methods of Teaching Modern Day Arithmetic.* Boston, The Gorham Press, 1923. 419 pp.

The purpose of this book is stated in the opening sentence of the Foreword: "The compelling reason for the publication of this book is to give concrete aid to the teachers of arithmetic." Concrete it is; and also very simple and elementary throughout. Young teachers who are looking for devices and teachers who do not know the subject-matter of the upper grades will find in Mr. McNair's book just what they want. Devices, games, and concrete suggestions are found in abundance. The more difficult problems such as are to be found in most of the textbooks are solved and explained.

Those who are acquainted with the shortcomings in subject-matter and method of many elementary teachers will find in this book much to commend. The student of elementary education who is acquainted with recent developments in the psychology and sociology of arithmetic and who is in sympathy with the modern scientific point of view in curriculum construction will, however, find much to condemn.

In the first place, there is a notable lack of scientific evidence to back up contentions and recommendations. To be sure, such evidence on many points has not yet been collected, in which event the author is entitled to his opinion. But the book lacks scientific tone; methods are endorsed dogmatically without apparent reason other than the bias of the author. For example, adding by grouping into tens is condemned as a crutch on page 54 but in the same chapter all subtraction and multiplication examples are presented with the minus sign and multiplication sign.

Again, in the chapter on measurements the author says, "conditions have shifted so that the practical measurements treated in our more recent arithmetics do not enter into the daily experiences of the average man . . . . Since, however, the purpose of this work is to aid the teachers, the measurements usually treated in the arithmetics will here be discussed." Then follow the usual topics, including wood measure, shingles, and carpeting. The following problem is carefully solved and the answer, 65⅔ yards, arrived at: "How many yards of Brussels carpet, ¾ yd. wide, will be required to carpet a living room 24′ by 17′? Carpet is to be laid lengthwise. 8 in. is allowed for matching."

The author does not seem to be at all disturbed by the fact that his illustrative problems often represent highly improbable situations. For example, on page 179, we have the case of the man who knows that 40 percent of his salary is $100 but who does not know the amount of his salary. The fact that

"some of these problems are still found in our textbooks" does not, in the opinion of the reviewer, at all justify the author in taking space to solve them. This relic of the older days occurs on page 230: "If A and B can do a piece of work in 4 days and A alone can do the same work in 6 days, how long will it take B to do the work?" On the same page is an illusion to a flag pole 102 feet in height which fell and broke into two pieces so that just three-fourths of the one was equal to exactly two-thirds of the other, facts which had in some manner been ascertained without knowledge of the lengths of the pieces. The title of the book, remember, is, "Methods of Teaching Modern Day Arithmetic."

The discussion of examinations makes no mention of the true-false, multiple choice, or other recently developed types of objective examinations.

There are many minor faults in the book which must be shared by the author and the publishers. The line spacing is irregular in places (pp. 12 and 13), figures are not drawn true to scale (pp. 141, 143, 314, 320), the heading of page 81 is incorrect, "height" is misspelled (p. 317), there is an incomplete sentence on page 20, "$112\frac{1}{2} \times 6408 = \frac{9}{8} \times 6408 = 720900$" (p. 356), and "data is" is found on page 409 and again on page 410.

In spite of its many faults, only a few of which have been mentioned, the book will be helpful to many young teachers. The reviewer will use it in his classes this summer but will give a more prominent place to the books of others, particularly to those by Thorndike.

*Ohio University* R. L. MORTON

PENNELL, MARY E., AND CUSACK, ALICE M. *How to Teach Reading.* Boston, Houghton Mifflin Company, 1923. 298 pp.

In view of the manifest demand for books which provide practical suggestions based upon scientific studies, any volume which purports to render that type of service attracts attention. The authors of this handbook on reading have written their own preface. Perhaps that accounts for the rather unusual agreement between purpose as there stated, and the content of the book.

For the most part the reader is obliged to take the scientific soundness of the book on faith, or to bring his own knowledge of psychological investigations and other scientific studies in the field of reading to bear upon his perusal of the book, for the authors keep their scientific sources and psychological authorities in the background throughout, and name only a few investigators and studies in an extremely inadequate bibliography at the end of the volume. To many practically minded persons these lacks will not appear significant, but most readers of this JOURNAL will criticize the paucity of specific references and wonder on what basis books and articles were omitted or included in the bibliography. Those who plan to use the book as study material with teachers in training or service, will have to content themselves with didactic presentation or supply the aforementioned lack and motivate reference readings from sources for their classes. The authors evidently had such courses in mind when they concluded each chapter with questions for discussion, provided numerous cross references and an index, and presented much of the material in outline form, thus facilitating study and ready reference.

In the two chapters in Part I the social significance of reading is discussed. Parts II and III present numerous ways and means of stimulating children to read and to love reading, and furnish a great variety of specific suggestions as to methods for developing comprehension and facility in the mechanics of oral and silent reading. Training in the effective use of books is discussed in a separate chapter, and individual difficulties are treated in connection with suggestions for remedial work.

In Part IV each of the three chapters deals with a group of grades, with objectives and attainments cited by grades; a selected list of suitable material is then given, with concrete examples of a variety of approved procedures. The term "universal difficulties" appears again and again, in a variety of situations in which the adjective does not apply. Other crudities and oddities of sentence structure and the unwarranted didactic finality of certain passages detract from a book in which there is much to commend.

As a product of the collaboration of workers in a city-school system the book is extremely interesting. Because of this fact, readers would no doubt have been glad of some brief mention or description of the plan by which the material was assembled and the part, if any, which classroom teachers took in planning lessons and trying them out. The authors should also have found it easy and expedient to provide some objective measures or other evidences to substantiate their statement that the suggestions were "tried out in all grades" and "found effective."

LAURA ZIRBES

*The Lincoln School of Teachers College*

PAULU, EMANUEL MARION. *Diagnostic Testing and Remedial Teaching.* Boston, D. C. Heath and Company, 1924. 368 pp.

President Lotus D. Coffman in his introduction to this book states the author's aim in the following words:

There were those who said, "Now that you have discovered new instruments and measures of education, how can they actually be applied, namely, can the classroom teacher and the administrator make use of them in their daily work?" Many illustrations of their actual and possible use have been given in the literature on education. Almost no books dealing with their everyday application to the schoolroom have appeared.

But we need wait no longer, for this manuscript covers this matter in a comprehensive manner. This final question which so many have asked, the author answers. The book is not a book on statistics. It is not an attempt to interest teachers in devising new instruments of measurement. It is not an historical review of the science of education. It is a definite attempt to apply what has been worked out scientifically to the daily work of the school, and in such a clear, concrete and suggestive manner that no teacher can fail to use it.

This book falls naturally into three divisions. Chapters I, II, and III introduce the teacher who has had no previous knowledge of the subject to the elements of testing in the elementary-school subjects. Chapters IV and V point out various bases for the grouping of children in the elementary school so as to provide adequately for their needs. The remaining chapters take up the fundamental elementary-school subjects, indicate the standard tests which may be used in each, and point out how the classroom teacher may use the results

of such tests to diagnose the difficulties of her pupils. There can be no question that Dr. Paulu has made a distinct contribution to the literature of educational research through his efforts to carry the testing program beyond the mere stage of accumulating statistics. He has made a real and successful effort to show classroom teachers how to interpret test results in such a way that the pupil may be more swiftly carried "from where he is to where he ought to be." The reader will be greatly helped by the suggestive problems which appear at the beginning of each chapter, together with the exercises and bibliographies which follow each chapter. There appears to be only one fundamental weakness in the author's treatment of his subject. He apparently has not felt the necessity of a more adequate basis for the placement of pupils in the elementary school than the basis afforded by intelligence tests. He apparently does not recognize the necessity for combining the results of educational and mental tests, and teachers' judgments together with a consideration of social and physical characteristics, before the placement of a pupil can be adequately determined. Aside from this minor defect, this book can be cordially recommended to the consideration of the elementary classroom teacher.

ROBERT H. LANE

*Assistant Superintendent, Los Angeles City Schools*

LEONARD, ROBERT J. *The Coordination of State Institutions for Higher Education Through Supplementary Curricular Boards.* Berkeley, California, The University of California Press, 1923. 188 pp. (Bureau of Research Studies, No. 13.)

This is a study of supplementary curricular boards as one of the methods now being tried in this country to bring about within a given state better coordination among the several state-supported institutions of higher learning. Three states, Alabama, Oregon, and Washington have such boards, and except for descriptions of other types of coordinating efforts in other states, the study is confined to these three states. As supplement to his use of documentary evidences, the author spent considerable time in each state conferring with those best informed on the problems of the state's higher education.

The four purposes are outlined by the author as follows:

Purpose I. To ascertain, in the establishment of the various institutions in each state, to what extent consideration was given to definition of function, location, and form of government of each with reference to a unitary plan for a state system of higher education. Thus, it may be discovered historically whether or not a basis has been laid for coordination.

Purpose II. To determine, by a study of the constitutional and legislative provisions for each of the institutions, the degree to which similar provisions have been made for each as to continuity of existence and to composition of, and powers granted to, each board of control; also, where provisions are found to be quite dissimilar, the extent to which these dissimilarities result in one type of institution having potential advantages over other types; and also, whether these dissimilarities are due to the operation of some principle or to haphazard formulation. The data thus obtained should lay the basis for more intimate insight into the problems of coordination.

Purpose III. To state and describe the present situation in higher education in the states including: Important issues as to institutional functions and curricula, relations among institutions in the professional preparation of teachers, relations among extension divisions, service relation between the institutions and the schools, and articulations between the institutions and the secondary schools. The data thus obtained will reveal the character of the immediate problems of functional coordination.

Purpose IV. To describe the provisions which have been made for coordination and to evaluate the work of the coordinating boards in (1) determining policies and curricula, (2) bringing about harmonious relations among the institutions, and (3) solving problems of articulation between the institutions and the high schools.

As an illustration of the comprehensive nature of the inquiry it may be noted that an exhaustive list of questions upon each of the following topics was answered in each state to satisfy the third purpose.

1. Important issues among institutions as to the definition of scope and curricula.
2. Relations among the state institutions engaged in the professional preparation of teachers.
3. Relations among extension divisions.
4. Service relations among the institutions and the public schools.
5. Articulation between the higher educational institutions and the high schools.

The report is rich in its detail of valuable information, and represents a technique of investigation which is very suggestive. In all three states, only meager results have been accomplished in bringing greater unity into the state systems of higher education. In no state does the plan in use meet all the essentials which the author regards as prerequisite to successful coordination. The author suggests that if the method of supplementary curricular boards is to be used with good effect, the following provisions should be made with reference to such board:

1. That there should be a clear cut division of responsibility between the supplementary board and the several institutional boards.
2. That the board should be composed of appointed (or elective) members having no connection with any of the institutions.
3. That all the higher educational institutions, including the normal schools, should be under the purview of the board.
4. That its powers should be sufficiently broad to accomplish the ends desired without the hampering necessity of periodic special legislation.
5. That it should be provided with a budget and empowered to employ clerks, research agents, and an executive secretary.
6. That it should be free to submit recommendations to the several institutions relative to any issue germane to the general problems of coordination.

This monograph is a most timely contribution. It should help to guide states in their efforts to solve a vexatious problem.

F. J. KELLY

*University of Minnesota*

LOSH, ROSAMOND, AND WEEKS, RUTH MARY. *Primary Number Projects.* Boston, Houghton Mifflin Company, 1923. 196 pp.

MCLAUGHLIN, KATHERINE L., AND TROXELL, ELEANORE. *Number Projects for Beginners.* Philadelphia, J. B. Lippincott Company, 1923. 110 pp.

In getting away from the traditional, formal arithmetic in primary grades, there seemed for a time the possibility that this important subject would suffer from neglect. There has, instead, been an intensive study of those experiences of children which contain the need for training in number relations. Recognition of the laws of habit formation has led to a more vital use of drill periods. The result is a far better type of arithmetic teaching. The average teacher, however, has found difficulty in getting in touch with this newer material.

*Primary Number Projects* brings together a large amount of varied and interesting suggestions for use with little children. Indeed, one is rather astonished to find so many ways in which number relations function in early school life. The number aspect of an apparently simple activity contains possibilities for training which should be capitalized. A chapter on counting projects, another on measuring projects, illustrate this.

Games and dramatization are used freely. Certain seat work activities make use of silent reading. Indeed, one is impressed with the constant need for number training in the modern primary school.

*Number Projects for Beginners* emphasizes the earlier phases of number work—number work for kindergarten, pre-primer, and first-grade groups. The projects grow out of the year's program, the number aspect is clearly defined, and the directions given can be carried out by the inexperienced teacher.

FRANCES JENKINS

*University of Cincinnati*

LA RUE, DANIEL W. *The Child's Mind and the Common Branches.* New York, Macmillan Co., 1924. 479 pp.

This is an attempt to give to teachers a simple and clear outline of psychology and to apply its principles to the teaching of the elementary-school subjects. The author's purpose in writing the book was to make it practical and positively helpful. "If it does not give you vital help for every hour of your busy day of teaching then it fails of its purpose." How well this purpose has been accomplished can be determined only by the response of the teachers and student teachers for whom it is intended. Certainly if it fails, it will not be because the author has not presented his material in a novel and attractive way. The book has a wealth of illustrative material, large numbers of concrete exercises for further study, and well-selected bibliographies for each chapter. It is written in a conversational style, although at times it gives the reader the impression of being "written down to the reader" as are some books written for children.

The book is divided into two parts: Part I is entitled "Education as the Forming of Bonds in the Brain," while Part II deals with "The Common Branches as Systems of Bonds." One may get a very good notion of the

author's method by following out this development of the idea of a "bond." "A certain lazy student attached a string to his door latch, so that he could pull it from where he sat at his study table." Here is a bond between the student and the door-bell. There are bonds between lifeless things, bonds in plants, bonds in lower animals, and bonds in the child. Whether you are educating a piano, an elephant, or a child it is a very simple process since it is always merely the forming of bonds. The brain discriminates—though it is only because a bond must be a bond between some particular stimulus and response—and "here issues a profound truth: Simple as this discriminating process seems, *it is all that is necessary to explain the most elaborate acts you will ever teach your pupils to perform, or the deepest thinking they will ever do* . . . . There is a bond for everything and everything has a bond." There are "well-worn pathway" bonds, coarse bonds, and fine bonds, trunk-line bonds, sensori-motor bonds and high-level bonds, and there are ways of flushing the nerve-centers so as to make them more active. Our old friends, the laws of readiness, exercise and effect, complete the simple picture of the child's mind.

Part II deals with methods in the various branches of elementary education. It is full of splendid suggestions of method, all of which are presented in a readable and interesting way. One cannot help wondering, however, whether the carrying over of the "bond-psychology" of Part I is really of much use. For example, in discussing whether it is desirable to have a left-handed child write with the right hand, the author says: "The sensible thing for us teachers to do is to make the right-hand bonds stronger if we can do it with moderate effort." This obviously means no more than if the "bonds" were omitted from consideration. While the example may be extreme the impression is left with the reviewer that most of the excellent description of methods in the latter part of the book could have been said quite as effectively without much reference to bonds.

E. H. CAMERON

*University of Illinois*

OSUNA, JOHN JOSEPH. *Education in Porto Rico.* New York, Teachers College, Columbia University, 1923. 312 pp. (Teachers College, Columbia University, Contributions to Education, No. 133)

This book represents in a wealth of detail the story of education in Porto Rico from 1511 to 1919. During the Spanish rule in Porto Rico, the church was at all times the dominant power in education, whether it established and controlled schools directly or, indirectly, through the organization of the government. Before 1820 educational activity was an imitation of that of Spain; only the more wealthy received its benefits. The curriculum of the elementary schools offered only the formal elements of the catechism, reading, writing, and ciphering. Secondary and theological instruction was provided by the monasteries. "The movement for the establishment of the university was never successful and those wishing a higher or professional education, with the exception of the priesthood, had to pursue their studies abroad."

From 1820 to 1865, paralleling a similar development in Spain and England and for a shorter period in the United States, instruction was stimulated

by educational societies. During this period the fortunes of education in Porto Rico depended much, also, upon the attitude of the political régime in power in the mother country. At various times during this period excellent plans for developing public education were formulated only to be dropped, and then to be revived or new plans made, and these were followed in turn by failure of execution. This characteristic of educational endeavor in Porto Rico under Spanish control is being exemplified today in Peru and other South American Republics. The governments and peoples of Spanish American countries are generally strong in elaborate planning, but very weak in execution.

During the period from 1865 to 1898 the interest in popular education increased. "Some provision was made for poor children." "Standards of teaching received some attention." Considerable progress in education was made after the Spanish Revolution of 1868 and the establishment of the Republic, but after the Restoration of 1874 educational conditions were even worse than in 1865. Education as a function of the state was, however, definitely formulated.

There was no definite organization of secondary or professional instruction before 1882 when the Institute was founded. The Institute provided for a credit system of private institutions of secondary education. It also accredited work done at home under private tutors. "The director of the Institute was superintendent of all schools allied to the official school, and he appointed a board of examiners to go about to the different towns to examine pupils of private schools, or who studied at home."

By 1898 "Porto Rico was as well off as Spain educationally," and the cultural status was equal to that of Spain.

During the period of American control great educational advancement has taken place in the development of elementary, secondary, and higher education. The University of Porto Rico and the normal schools constitute the higher educational institutions. Consolidated rural schools, night schools, and rural extension work have been established. The rural schools are in session ten months during the year and the night schools about five. There has, also, been a rapid development of private schools, which carry the curriculum of the public schools and conform to their standards.

In addition to instruction in the so-called regular subjects, courses in special subjects are offered in the elementary and secondary schools in English and Spanish, manual training, home economics, agriculture, and physical education. In twenty years under the control of the United States much more educational progress has taken place than under the four centuries of Spanish rule.

For completeness and exactness in educational information this book seems to lack nothing worth while; but in its treatment of the sociological and psychological factors of education, of the human-interest traits of the people, which American educators want to know and need to know, there is lacking much to be desired. Nevertheless, it is a valuable contribution and should be extensively used by teachers of classes in school administration.

H. G. LULL

*Kansas State Teachers College*

# News Items and Communications

**This department will contain news items regarding research workers and their activities. It will also serve as a clearing house for more formal communications on similar topics, preferably of not more than five hundred words. These communications will be printed over the signatures of the authors. Address all correspondence concerning this department to Doctor E. J. Ashbaugh, Ohio State University, Columbus, Ohio.**

Professor D. A. Worcester, director of the Bureau of Educational Measurements and Standards, Kansas State Teachers College, Emporia, is on leave of absence attending Ohio State University this year.

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Superintendent J. R. Patterson for several years superintendent of schools at Bucyrus, Ohio, is the new superintendent at Athens. The change of position is a promotion, not so much in the size of the system as in the opportunity afforded by the big cooperative program planned between the board of education of the city and the administration of Ohio University.

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The Kansas State Scholarship Contest conducted last May by the State Teachers College of Emporia brought together 467 pupils representing 54 schools from all parts of the state. Twenty-eight different schools received points in the contest. Emporia won first place and Holton, second.

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Volume 5, Number 3 of the Survey Bulletin of the city schools of Bucyrus, Ohio, is a worthy successor of the preceding numbers. Superintendent Patterson has persistently followed a testing program with ever-increasing emphasis on remedial work. The present volume, which records the results for the three measurements during 1923-24 as well as certain comparable data from earlier years, gives definite evidence that the program has been effective.

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Professor W. R. Atkinson, dean of the Southwestern Presbyterian University at Clarksville, Tennessee, reports that this is the fiftieth year and the last for this university in its present location and under its present title. In September, 1925, the institution will move to Memphis and change its name to Southwestern, the College of the Mississippi Valley. One million six hundred thousand dollars was raised last year to equip the new institution, and several buildings are under construction. It is the intention to limit the school to undergraduate work and to maintain the highest possible standard.

The program of expansion of the Department of Education of Ohio University at Athens under the direction of President Bryan and Dean McCracken is shown by the character of the new men being brought to the university this fall. Among the number are: Dr. George E. Carrothers, formerly assistant superintendent of schools at Cleveland; Dr. Marvin F. Beeson, San Diego Teachers College, San Diego, California; and Mr. Ray Latham, assistant superintendent of schools, Duluth, Minnesota.

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Dr. M. J. Van Wagenen, University of Minnesota, has recently devised an age-quotient chart for use with mental and educational scales. He has also produced a distribution chart for mental and achievement quotients providing separate columns for each half grade from grade v to grade VIII on each of a number of the more frequently used achievement tests. These, with individual record cards and survey record cards, form a series which may be used to advantage by those engaged in diagnostic surveys.

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The following tabulation relative to the growth of legal safeguards of child labor is of interest as we face the question of ratification of a child-labor amendment to our Federal Constitution.

| | 1904 | 1923 |
|---|---|---|
| Number of states making 14 years the legal minimum for factory work | 13 | 45 |
| Number of states having an eight-hour day for children under sixteen | 1 | 32 |
| Number of states prohibiting night work for children under sixteen | 5 | 34 |

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We have recently received Form III of the Purdue English Test by Professor G. C. Brandenburg. For the benefit of those who are not already familiar with this test, a brief description may be of assistance. The test consists of a series of seven subtests, in the order named: Punctuation, Grammar, Choice of Words, Literary Information, Spelling, Vocabulary, and Reading. It is a timed test, and standards are available for the four high-school grades and elementary-school teachers.

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A committee of teachers of New York City presented to the board of education a plan for sabbatical leave of absence for travel or study. The plan proposes full compensation to the teachers less the cost of a substitute. In this way outside of nominal expenditure for clerical help and general administration, the scheme entails no financial burden to the Board of Education. In general, this would enable teachers who have served seven years in the city system to take one year's leave of absence at approximately half pay.

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The junior high-school survey committee of New York City investigated the pupil-period load per week last spring and found a variation of from less than 900 to more than 1,700 pupil periods, and that on the average teachers gave actual instruction for slightly more than 31 periods per week, or more than six daily periods. Sixty-four percent of the teaching staff had loads

greater than 1,100; and 37 percent, greater than 1,200. Six periods per day or 30 per week with 1,200 pupil periods would give an average of 40 pupils per class. The reader can figure the size of class for those with a pupil load of 1,700 or greater. The committee has recommended 1,100 pupil periods per week as the maximum for junior high-school teachers.

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The junior high schools of Richmond, Indiana, have had in use for the past four years a course in general language. Its purpose is to reveal to the pupil his personal connection with language and help him to realize that language is a living, growing thing, subject to change. It is designed to assist students in reaching a decision as to their ability to master foreign tongues, and whether the language decided upon should be modern or classical. As the result of four years of experience it is felt that this course in general language is of definite value to children in reaching that decision, and also to those who elect no language since the course has enriched every phase of the child's future study in English and kindred courses.

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Forty-one of our 48 states have laws relative to free textbooks in the public schools. Of these, six states provide school books at state expense, and in one some funds derived from state sources are available for furnishing free textbooks. Thirteen states require local authorities to provide books with local moneys, and twenty-one states have laws which permit the use of school funds for furnishing free texts.

A recent volume on *Free Textbooks in Public Schools* by George Howard, Jr., Raleigh, North Carolina, presents a series of plans for introducing free textbooks. It points out the relative cost to a community of textbooks provided by parents, for free textbooks in the form usually furnished by book companies and in paper binding with material for a single grade in each. Those interested in the discussion of free textbooks will do well to make themselves familiar with this volume.

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A brief study of elimination in the high school of West Allis, Wisconsin, made by the department of Educational Measurements, reveals the fact that during the two and one-half year period from September, 1920, to January, 1923, 59 percent of the pupils who left school withdrew to enter employment. Eighteen percent of the withdrawals occurred during the summer vacation, when the cause could not be ascertained. Seven percent entered another school, and seven percent completed the two-year commercial certificate course. Seventy-eight percent of all withdrawals occurred in the eighth, ninth, and tenth grades. Only two percent of the withdrawals were failures, while eight percent were A or superior students. Forty-four percent of all the withdrawals and 53 percent of those who withdrew to enter employment were doing D or just above passing work.

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Dr. S. L. Pressey, Ohio State University, made an extensive investigation among the students of the College of Education of that institution concerning current practices in college teaching. An elaborate questionnaire was devised

which covered questions of assignment, textbooks, notes, method of conducting class, and written work. The students reported the name of the class, the teacher in charge, and the grade received, but did not reveal their own identity. The results indicate that among the characteristics which students consider distinctive of good courses were: assignments are explained; the text is interesting; the lecture can be outlined; the instructor does not make pupils afraid to ask questions; the instructor follows a clear outline with frequent summaries, demonstrations, and definite application to present-day problems; he tries to discover the individual needs of pupils; he lets pupils know their exact standing at all times; he gives fair examinations on things which have been emphasized in class; and he conducts review recitations before the examination. The students believed that they should be held responsible for the assignments, and that written work should be returned soon enough to be of definite assistance in the remaining work of the course.

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The twenty-four most popular stories selected by fourth-grade children in an experiment conducted in the university elementary school of the State University of Iowa by Miss Wilma Garnett are as follows:

1. Brother Rabbit and the Little Girls
2. Wee Willie Winkie
3. At Home with Grandfather
4. Whittington's Cat
5. Baker's Blue Jay Yarn
6. Dog of Flanders
7. *Little Lord Fauntleroy*, Chapter I
8. *Tom Sawyer*, Chapter II
9. The Ransom of Red Chief
10. King of the Golden River
11. Gold Tree and Silver Tree
12. Pinocchio
13. The Cat That Walked by Himself
14. Blue Beard
15. Rikki Tikki Tavi
16. The Griffin and the Minor Canon
17. Moufflou
18. Robinson Crusoe Builds a Home
19. *Tom Sawyer*, Chapter I
20. Brothers of Angels
21. Alenoushka and Her Brother
22. Benjamin Franklin
23. The Three Citrons
24. The Legend of Sleepy Hollow

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Several recent appointments to the faculty of the College of Education of the University of Cincinnati are announced by the dean, L. A. Pechstein. C. A. Gregory, professor of education, University of Oregon, has been called to a newly created professorship in the field of school administration. William H. Burton, of the School of Education, University of Chicago, is appointed to a new professorship of educational method, this carrying with it the general directorship of student teaching. W. A. Justice, director of educational research at Virginia, Minnesota, is called as an assistant professor, to work

with Prof. H. C. Hines in the field of educational measurements. G. W. Hendrickson, of the Department of Education and Psychology at the University of Rochester, is called as assistant professor of education to be associated with Prof. A. L. Hall-Quest in the field of secondary education. Mr. W. Clark Trow, serving for the present year during the leave of absence of Prof. Hall-Quest, is given a permanent appointment and made the head of the newly established Department of Educational Psychology. Dr. Ada Hart Arlitt, psychologist of the Mental Hygiene Clinic, and Dr. Mabel R. Fernald, director of the Psychological Laboratory, are appointed as lecturers to be associated with Dr. Trow in the development of the Department of Educational Psychology. Miss Edith Campbell, director of the Vocation Bureau of the Cincinnati public schools, has been appointed a lecturer in the field of vocational education. The staff will be further increased by subsequent appointments, in order that the developments of the five-year cooperative courses in teacher training and the Graduate Department of Education may be properly carried out.

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Mr. R. L. Morton, a graduate student in the Department of School Administration, Ohio State University, made a study of certain phases of the arithmetic course of study as shown in the courses of twenty-two states and twenty-nine cities. He found that discipline as a criterion for determining what shall be taught is still evident in many of the courses. For example, the two following problems are taken from a state syllabus published in 1923.

(1) A, B, and C furnish a carload of lumber. A furnished a fourth of it, B furnished 1,000 board feet more than C; and B and C together furnished 7,200 board feet. Find the number of board feet loaded by each.

(2) Two houses were sold for $5860.00. On one the gain was 30 percent of the cost, on the other the loss was 20 percent of the cost. The gain on the two was $630. Find the cost of each. (Not much sense in having such a problem, but it is well to know how to solve it.)

As illustration of the content and variation, the recommendation on the subject of Roman numerals shows one city teaching to X in the first grade; two states and two cities, to XII; one city, to XX; and one state, to XXI. In the second grade, one city teaches to X; eight states and seven cities, to XII; one city, to XIII; two states and two cities, to XX; one state, to XXV; one state and two cities, to L; and two cities, to LX. In the third grade, the range is from V with presumably no study of Roman numerals in grades I and II in one state to M in one city. On the subject of notation and numeration there is likewise the greatest of variability. In the first grade the mode is 100, the range is from 20 to 132, both extremes being found in city courses. In the second grade the mode is 1,000 and the range is from 99 to 10,000. In the third grade the central tendency is seemingly 100,000, and the range is from 1,000 to 1,000,000. In the fourth grade the central tendency seems to be 1,000,000 with a range from five digits to twelve digits. For the fifth grade only two states and six cities refer to the subject, and one of these specifically states that the pupils shall learn to read and write all numbers, which is taken to mean that the limit is the limit. Most courses of study do not even pretend to set up standards of attainment.

**Concerning a Test to Test Potential Reading Power**

Much time is wasted yearly in all first grades, in classifying entering children. It is an accepted fact that some of these children are going to learn to read, and that others are not. The great majority of school men will place the proportion of children who will repeat the first grade, at anywhere from one-fourth to one-third.

On the first day of school, nobody knows which children these are going to be. The teacher, therefore, usually proceeds by the method of trial and error, to decide who learns rapidly, who learns slowly, and who fails to learn at all. She calls these her A, B, and C classes, and names them Bluebirds, Busy Bees, and Baby Chickens, or some other mystifying titles, in order that the children themselves may not feel discouraged or filled with empty pride. This process consumes many weeks. No first-grade teacher knows surely where all her children belong before Christmas. And even after Christmas, some children are bound to surprise the most wary teacher, either by suddenly coming to life, or suddenly falling from grace.

Everyone agrees that a really deficient child cannot learn first-grade reading at six years of age. There are also children of normal intelligence, whom we will call normally backward, who will not learn either. There will be some mental reason for this lack of ability to concentrate, lack of visual memory, or lack of will.

There are many tests in existence which test general intelligence, and general intelligence, without doubt, is closely linked up with potential power to read.

There are, however, many children having a normal or even high intelligence quotient who prove to possess some mental twist not detected by the ordinary intelligence test—even the individual Binet test—which makes it tremendously difficult for that child to learn to read.

Would not a group test, designed for this purpose alone, be worth working out? If each and every portion of the test were directly related to the subject of reading, and that alone, testing all the powers used in learning to read, in every possible way, much might be learned about each child during the first week of school. If a child concentrates on the test, he will be likely to on reading. It does not always follow, that if he cannot concentrate on the test, he cannot learn to read. It is, however, a broad stroke in the teacher's picture of the child. Practically no testing should be regarded as final, but a wrongly diagnosed child may at any time be instantly transferred from one reading class to another.

Once you have your children sorted out, what will you do with them? Supposing, for the sake of an argument, that you have classified a first grade correctly into three groups, the lowest of which *cannot* "by hook or by crook" pass? In such a case the teacher does one of two things, either she tries desperately day after day to teach this group part of the same material which is meted out to the brighter children, or else she neglects them. She may have learned by long experience that they cannot learn the required amount, that they are going to repeat anyway, and that they take time from the other children who really profit by her extra time; therefore, she refuses to waste it

on them. Young teachers are seldom guilty of this, but they worry about it. The long nights of panic which every inexperienced first-grade teacher must undergo, might be partly avoided by a simple explanation and a simple remedy.

The explanation would be in statement of fact; that she cannot hope to promote 100 percent, unless she has a picked class. The remedy lies in detecting which children will comprise the slowest portion of her class, and then teaching them *according to their powers*, and not according to the prescribed course of study.

It is discouraging to teach part of a large mass of material to a slow moving class; it is more inspiring and more efficient, to teach this class something entirely different; something which has an end. There should be an EASY PRIMER. What superintendent of schools has not heard the plea for something easy! The material in this Primer should be so slight that it would have no power to discourage anyone. The unfortunate practice of giving a dull child day after day a task which is too difficult, hurts the child's morale to such an extent, that he always bears a scar. The habit of idleness is fostered by giving a child something which he knows in advance he cannot do. By the time he has begun to repeat, he will have a mental complex that he never has been able to accomplish what is expected of him, so why try! And this idea will be flourishing at the very time when he possibly is able to do acceptable work.

A Primer, containing less than 100 words, in large type, with many, many vain repetitions; with no ill-advised words such as "scissors," "bumble-bee," and "Foxey-Loxey" which give the child absolutely no key to any other book; with colored pictures; and accompanying teaching stories, would at least be something as yet not available to the primary teacher, and a simple means to prevent absolute failure of many children each year.

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